February-1960

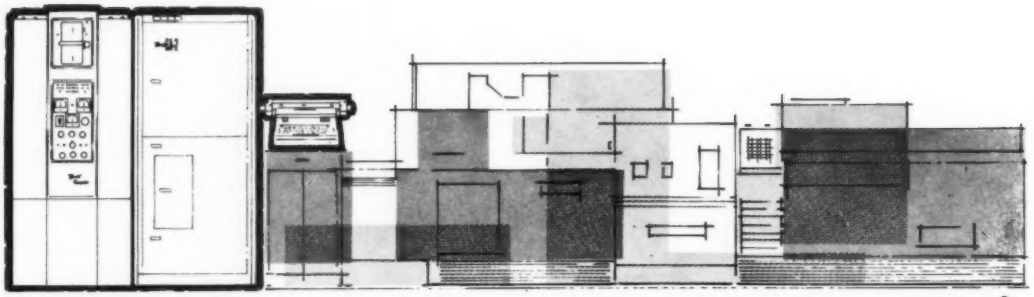
# DATA PROCESSING

The Magazine of Automatic Office Methods and Management

SOLVING

# ADMINISTRATIVE PITFALLS

page 15



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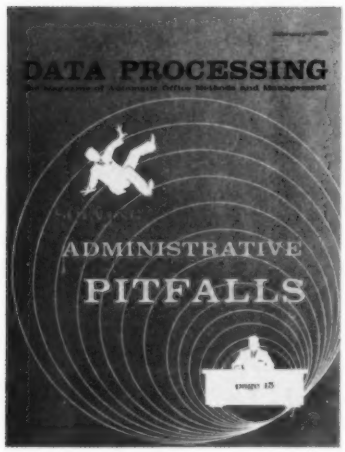
Volume Two • Number Two



Publisher, FRANK H. GILLE

Editor, EUGENE F. MURPHY

Managing Editor, MORTIMER J. SULLIVAN
Associate Editor, JAMES W. O'CONNOR
Contributing Editors: JOSEPH R. DE PARIS
RAYMOND DREYFACK, RAY MARIEN

Assistant to the Publisher, ROSEMARY A. DORR
Art and Production Director, DOUGLAS E. HOLDAWAY
Circulation Director, PATRICIA A. DEC

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**Also publishers of The Punched Card DATA PROCESSING Annual (Applications Volumes and Reference Guide) and Data Processing Handbooks.**


# OBSERVATIONS . . .
## from the publisher . . .

THIS IS OUR TENTH ANNIVERSARY YEAR. It was in 1950 that research was begun to create a communications medium *"dedicated to the advancement and enlightenment of the science of Machine (Punched Card) Accounting."*

The major obstacle soon became apparent. How could these people be reached? There were no obtainable lists of people who were presently using punched card methods. There was no national association of data processing managers. Lists of local and regional groups were closely held and not available.

Then began the laborious task of compiling the list of those who could most benefit from this service. No professional list compiler was willing to undertake the task. The only common denominators that could be applied to existing directories were size of company in terms of a volume of transactions and number of employees. Armed with these basic tools, numerous directories were obtained and many months later a basic accumulation of "suspects" represented our hopes for the future.

While the methodical checking and building of this list continued, the editorial ground work was laid for the first nationally distributed publication in the data processing field. Nearly 12,000 copies of the first volume of The Punched Card Annual were purchased.

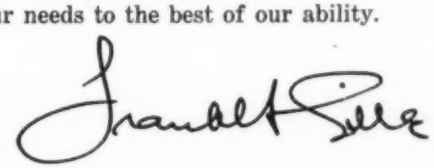
In 1950 electronic computers were essentially a dream — surrounded by an aura that might more easily inspire a fiction writer than a business editor.

*"There could not possibly be a market for more than 40 of the 'brains',"* predicted some experts. The fact that nearly 10,000 computers of all sizes are now in operation gives ample testimony to the tremendous progress that has been made in this decade. This computer growth is merely symbolic — perhaps the growth in punched card and punched tape use, especially in offices where manual methods were formerly employed, is even more significant.

We have endeavored to keep stride with this growth in our publication services.

On the occasion of our tenth anniversary year, we are pleased to announce a new series of more than 20 specialized handbooks which are described elsewhere in this issue. Other services are now being planned to bring you added benefits from our data processing research activity.

We wish most sincerely to thank those of you who have been with us from the beginning — for your patience in bearing with us through strikes, production breakdowns, and the myriad of other circumstances that occasionally cause an impairment of service. Without your forebearance, we could never have seen the light of a second decade. To you also, our new friends, we wish to extend our thanks. To all a renewed pledge that in the future, as in the past, we will make every reasonable sacrifice to serve your needs to the best of our ability.



# CONTENTS

## Special Feature


▶ SOLVING ADMINISTRATIVE PITFALLS by Owen Smith ..... 15

*The data processing "boss" has become a manager in the true management sense. How do you, as a data processing manager, measure up to the standards of your employees and your superiors? Mr. Smith highlights significant Do's and Don'ts for managing people.*


## Features


▶ DATA PROCESSING IS NOT A WORLD OF ITS OWN by Raymond Dreyfack ..... 9

*Too often data processing managers and supervisors may be operating efficiently themselves yet not be serving their organizations in the best way.*

▶ MATERIAL CODING FOR DATA PROCESSING by William H. O'Keeffe ..... 20

*The author describes the reasoning and the method used to convert a manual code system to an efficient electronic data processing code, without loss of familiarity to all concerned.*

▶ WORK MEASUREMENT — A PART OF A DATA PROCESSING SYSTEM by Cecil Miller ..... 22

*Data you should know about this "tool" that is attaining widespread use in determining workloads, man and machine availability, and efficiencies of both in paperwork processing.*


## Application of the Month


▶ SENSITRONICS AID BANK by Allen A. Greenstreet ..... 13

*The Burroughs F4212 electronic bank bookkeeping system for commercial checking accounts offers a concrete method of true single posting.*


## Monthly Features


▶ *Joseph R. DeParis on EQUIPMENT*

HARDWARE IN THE '50's ..... 18

▶ *Ray Marien on FORMS*

THE FORMS SALESMAN ..... 27

▶ *Raymond Dreyfack on PERSONNEL*

CREATIVE DRIVE: The Yardstick of a Manager's Value to His Company, His Installation — and Himself ..... 25


## Departments


▶ BOOK SHELF ..... 38

▶ COMMENTS FROM READERS ..... 7

▶ CONSULTANT'S DIARY ..... 5

▶ DATA PROCESSING FORUM ..... 40

▶ DATA PROCESSING QUIZ ..... 8

▶ I'VE GOT A PROBLEM ..... 28

▶ NEWS SUMMARY ..... 12

▶ NOTABLE QUOTES ..... 38

▶ OBSERVATIONS ..... 1

▶ OUTPUTS ..... 34

▶ PEOPLE AND PLACES ..... 35

▶ PRODUCTS AND SERVICES ..... 31

▶ SEEN IN PRINT ..... 39

# AUTHORS

OWEN SMITH *("Solving Administrative Pitfalls")* is Vice President of Statistical Tabulating Corporation. A native Missourian, he attended Washington University in St. Louis. After spending two years with International Business Machines Corporation, Mr. Smith joined the newly organized McDonnell Aircraft Corporation in 1941 as Manager of the Records Division. In this position he was in charge of methods and procedures as well as all punched card facilities and other administrative control functions.

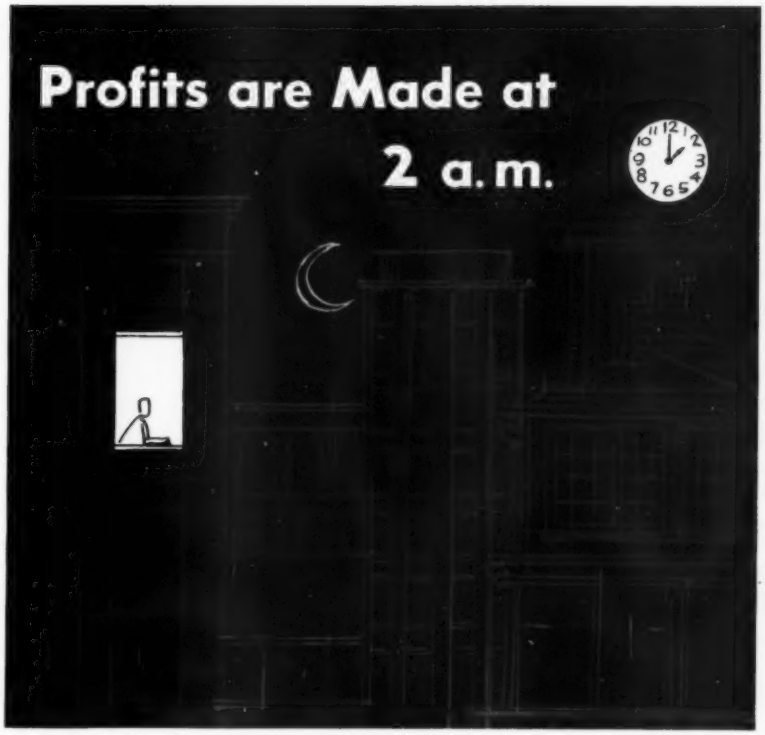
Shortly after returning to McDonnell from duty with the U. S. Navy he resigned in 1946 to become Manager of the first branch office opened in St. Louis by Statistical Tabulating Corporation and in 1948 was transferred to New York where he became Manager of the Eastern Division.

WILLIAM H. O'KEEFFE *("Material Coding for Data Processing")* is currently responsible for installing an integrated inventory and production control system for the Elmes and King Division of American Steel Foundries. The system, now nearly in full operation, will encompass all inventory and production transactions, planning and reporting.

Mr. O'Keeffe holds degrees in Engineering and Business Administration from the University of Michigan. His background includes systems and procedures experience with IBM and management consulting.

CECIL L. MILLER *("Work Measurement in a Data Processing System")* is supervisor of data processing operations at the data processing center, Sylvania Electric Products, Inc., Camillus , N. Y. A graduate of Temple University, School of Commerce, Mr. Miller's entire business life has been devoted to the organization, development, installation and operation of punched card and computer systems. He joined Sylvania in 1954 and has been associated directly with the data processing center since its inception.

■ ■ ■


The City sleeps, but this business goes on as usual, with the help of Baltimore Business Forms. Day and night customers phone their orders to central headquarters. Robot machines, in branch delivery offices, print orders simultaneously on troublefree Therm-O-Seal Handy-Fast Forms, recommended by the Baltimore Business Forms Systems Advisor. When morning comes . . . nighttime orders are completely written . . . ready for delivery without delay. The profits have been made . . . while the city sleeps.

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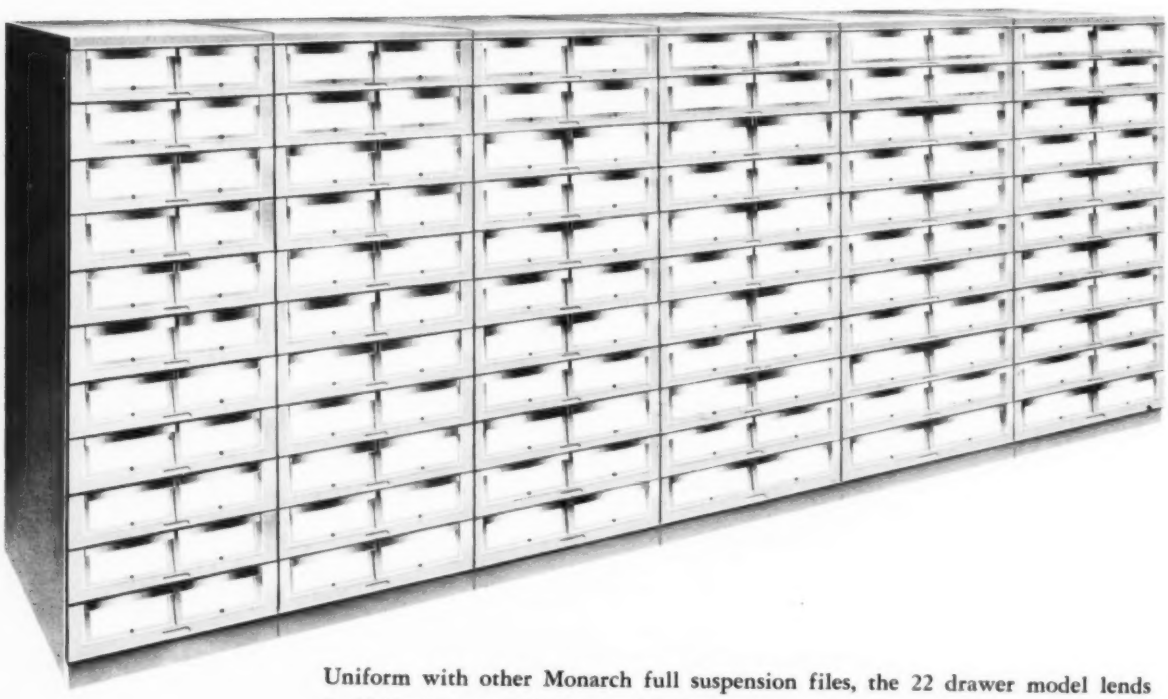

Uniform with other Monarch full suspension files, the 22 drawer model lends itself ideally to multiple use. All the features that have especially recommended these new Monarch files are found in the 22 drawer model (P 1417).

A supplement illustrating the new full suspension files, as well as other Monarch equipment, is in preparation and will be sent to interested users upon request.

MONARCH

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EUGENE F. MURPHY

# from a data processing *Consultant's Diary*

**JANUARY 4th — MONDAY**

Spent the day with an office equipment manufacturer whom we advise on product development. The devices that will be coming off the production lines within the next few years will make present bookkeeping and accounting machines almost totally obsolete, especially for small companies.

**JANUARY 6th — WEDNESDAY**

An experienced and qualified punched card supervisor, whom we've known for years, is becoming a real problem. A new application is being installed and the extra workload is proving to be more than he cares to gear himself to, even though he knows that after the transition all will be smooth again.

**JANUARY 7th — THURSDAY**

Had a long discussion with another consultant over lunch. Talked about ethics in consulting and their abuses. We wondered how much we are hurt by these abuses and by fly-by-nights who promise the moon and can't deliver—also about whether or not we benefit or are hurt by promotion put out by the well-established, large agencies.

**JANUARY 8th — FRIDAY**

Heard of the death of one of the real pros in this field — and a good friend — Ben Graham, who conducted the famous Lake Placid paperwork simplification program and long time, big time Standard Register speech-maker. It was through Ben that I met such wonderful people as Dr. Lillian Gilbreth, who received the 1959 International Systems Award of $1000 and promptly turned it over to her favorite charity. Ben Graham died on Thursday, January 7, 1960.

**JANUARY 13th — WEDNESDAY**

Have a field trip scheduled for my NYU course tonight. I've never been convinced that these trips to office equipment manufacturers' showrooms or forms manufacturers' plants are particularly beneficial. I think the students welcome the relief from the monotony of classroom lecturing and maybe on that score alone, it's a good idea. I prefer to have movies, film strips or ideally, good guest lecturers. With guest lecturers the choice is often a big name or an unknown guy with a message that is worthwhile.

**JANUARY 14th — THURSDAY**

For the past few weeks we've been gearing up for the new Punched Card Annual. Final planning meeting was held over a month ago. We're hoping to have it out by June. I think the special feature, "Do-It-Yourself" Feasibility Study Check List will be very popular.

**JANUARY 18th — MONDAY**

Today, a quick trip to Philadelphia and back tonight. A prospect is unhappy with his first attempt at office automation — wants to throw out the system. Probably all he needs is some improved accuracy control and a couple of operational shortcuts — I hope! Every time we have to replace one manufacturer's equipment with another's we make an enemy.

**JANUARY 19th — TUESDAY**

For the next three days (January 20-22) we'll "chair" an AMA seminar on Evaluation and Improvement of Data Processing Operations. We have good speakers lined up and about 40 registrants from all parts of the country. Gabe Stilian, the head of AMA Office Management Division, has taken care of everything except how all of us will make up for lost time next week. I guess I've been chairman of a half dozen AMA seminars but will never fail to thrill to the nationwide accents and opinions — all different — but all worth hearing.

*(continued on page 39)*

# NEW...

# MODEL 10 SCRIPTOMATIC ADDRESSING MACHINE

## NOW *EVERYONE* CAN CUT ADDRESSING COSTS *SUBSTANTIALLY!*

Scriptomatic advantages are now within reach of small list users with the new Model 10 Scriptomatic Addressing Machine.

### HERE IS A TYPICAL COMPARISON OF FIGURES:

Of course, every installation has its specific requirements. These figures are reported only to guide you on relative costs.

**Cost of Nearest Competing Equipment versus Scriptomatic Model 10**

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| MACHINE X | $1,355. | NEW MODEL 10 | $1,790. |
| Feeder | 709. | Feeder | 400. |
| Embossing Unit | 1,560. | Master Card Writer | 675. |
| 21,000 Plates, embossed and assembled | 1,050. | 21,000 Master Cards typed including carbon, etc. | 362. |
| **Total Cost** | **$4,674.** | **Total Cost** | **$3,227.** |

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# Comments from Readers

**EDITOR'S NOTE:**

In the November/December issue we printed a letter we received from a reader who was seeking a solution to problems posed by basically incompatible system-machine relationships.

We're pleased to present here the answer directed by G. Edward Bissell to Leonard J. Palmer and other readers with similar problems.

### Incompatible Data Systems

*Ottawa, Canada*

The problem of implementing data systems incompatible to mechanized data processing units in the field offices is more that of misunderstanding by top management of a general concept of integrated data processing than that of the field unit's difficulties to implement.

Any system being implemented should have been designed from the bottom up, rather than from the top down. Experiences in many cases will indicate that when management decides on a system and thrusts it upon the field units without taking proper cognizance of the processing limitations of the field unit, then it is conceivable that incompatible situations will result. This is a problem of management not realizing the implications of implementing the system. It may very well be that the field units are not properly represented in the management planning group and the latter do not have the basic knowledge of problems experienced in the field.

When such a situation exists then there is very little a field unit can do in "solving the problem" other than using techniques of their trade in implementing the system to the best of their ability. Trying to solve this problem at field unit level just compounds and prolongs an already existing faulty company policy and does nothing to solve the basic problem. The real solution is to get at the top management policy, criticize it, and offer recommendations for policy improvement. Field units have the responsibility towards their head office of bringing incompatible situations to their attention.

Such problems may partially be eliminated by top management doing a thorough operation analysis of their entire operations, be it logistic support, accounting, distribution and control of material, or what have you. Each process must be charted in detail from desk to desk and from warehouse unit to warehouse unit. The operation analysis chart must be explicit and must represent the system as it operates. With possession of this tool, the management planning group may then design new systems knowing very well what resulting effects there will be at field unit level. Field unit procedures must be designed in the same detail as the original operation analysis was charted. Procedures must be standardized to the nth degree to make field units exact copies of one another. Then and only then will a truly integrated approach have been taken and a compatible system designed.

By building a system from the bottom up, it is less likely that incompatible situations will arise. Operating directives will reflect all the problems experienced in the field and will make allowances for inconsistencies such as the procuring of additional or different types of equipment, re-training of personnel, revamping of existing procedures, etc.

The problem of employee turnover may be somewhat solved by detailing statements of duties for all data processing jobs. Instructions should be explicit enough that a minimum of supervision is required in getting a new employee used to the system. The procedures should be self-teaching. These procedures may be designed by the supervisor, however, more than likely they will be passed down from the head office as standard operating procedures for any field unit. They are standardized so that personnel can be transferred from one unit to another and become orientated to the new unit without disruption. By making one field unit compatible to another through standard operating procedures, it is easier to implement new procedures and to orientate new personnel into the system.

**G. Edward Bissell**
236 St. Laurent Blvd.
Ottawa, Ontario, Canada

### Forms

*Baltimore, Md.*

The article, "Forms and Forms Control," which appears in the November/December 1959 issue is an excellent one, and all of us in the Baltimore Business Forms Company feel that we would like to have each of our direct salesmen read this article.

Could you possibly grant permission for us to reproduce this article and mail it to our sales representatives?

**Thomas W. Richards**
**Advertising Manager**

Permission granted. Ed.

### From One Editor to Another

*Los Angeles, Calif.*

. . . I certainly would have enjoyed talking to you . . . to exchange views on the hazards of editing publications in the data processing field. . . .

I have noted the growth of your magazine with interest and I certainly feel you are doing an excellent job.

**Santo A. Lanzarotta**
Editor
DATAMATION

### Public Accountants and Automation

*Washington, D. C.*

We are subscribers to your excellent publication and find it extremely interesting. We would like to reprint some of the articles in

*(continued on next page)*

your magazine for our official publication, the National Public Accountant, as our members are interested in data processing.

We read with particular interest one of the feature articles in your November/December issue, "Office Automation — A Challenge to Personnel Relations," by Raymond Dreyfack. May we have permission to reprint this?

**Geraldine Farrell**
Administrative Assistant
National Society of Public Accountants

Permission granted. Ed.

### Nice to Hear

*Columbia, S. C.*

From a personal viewpoint I enjoy your publication very much and I think that there are some very interesting articles in every issue.

**Herbert G. Schuett, Secretary**
Columbia Chapter
National Machine Accountants Association

### About the Annual

*Boston, Mass.*

Recently I had the opportunity to read your annual. You are doing an excellent job of showing systems, procedures, etc. I do wish you had more information about insurance systems for agencies and companies, however, I realize these systems are not easily explainable.

**Eugene L. Ames**
President
National Tabulating Service

*Willow Grove, Pa.*

Thank you very much for sending us the copy of the Punched Card Data Processing Annual. It certainly is a beautiful book and I extend my heartiest congratulations to the editor and staff who compiled it.

**Dickson Ash, Editor**
Office Executive
National Office Management Association

■ ■ ■

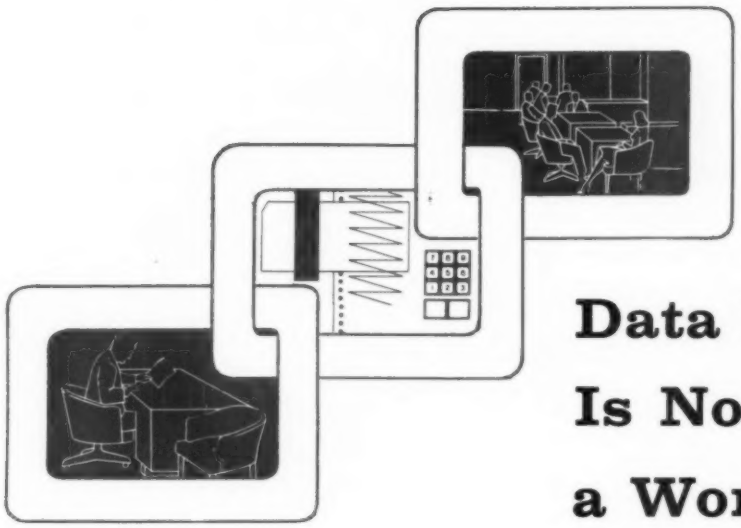
# Data Processing QUIZ

## QUESTIONS:

1. What are some characteristics of an office procedure that would indicate automatic data processing methods might be practical?
2. What are the steps in evaluating whether or not an automatic data processing system is more economical than a manual system for any specific accounting procedure?
3. What are some factors to be considered in punched card design?
4. What are some automatic features of the key punch machine?
5. What is a master card? What are some of its uses? How is it identified?
6. Describe how summary punching is used in an accounting procedure.
7. Describe the principles of continuous inventory tub-file application.
8. Discuss the advisability of accounting machine operators following a procedure through all of its steps, as opposed to each operator working at one machine and handling all procedures that involve the use of that machine.
9. Name at least four of the techniques of Operations Research.
10. Define a "tub-file" and give an application.

## ANSWERS:

1. Many processings of some data, repetitive cycle of operations, sufficient volume.
2. a. Analyze the manual system for improvement.
   b. Develop an automatic data processing system.
   c. Determine the cost of each.
   d. Determine the advantages and disadvantages of each.
   e. Compare the two.
3. a. What information is required.
   b. Maximum number of characters per field.
   c. Sequence in which fields will appear.
4. Duplicate, skip, elect, shift to alphabetic or numeric.
5. A master card contains control or reference data which is used repeatedly. Name and address cards and product master cards are common examples. It is usually identified by an "X" or "Y" punch in a column or by a card code punch in column 80 or 90 depending on the system.
6. The best example is summary punching year-to-date figures in a payroll application. The current earnings cards merged with the previous period's year-to-date earnings cards are processed through the accounting machine to give the Payroll Register and punch the current year-to-date earnings cards.
7. Signal cards are placed at specific points to point out Re-order, Below Minimum Requirements and Out of Stock. In this way both the punched card inventory as well as actual inventory condition are signalled for appropriate actions.
8. Where this is possible it is to be preferred because one person is more familiar with the procedure and can pace the work flow to fit schedules. He can also more readily spot control errors and rectify them as they occur. From a morale standpoint it gives the individual a chance to learn more than one phase of the operation as well as breaking the monotony of processing trays of cards of one machine all day.
9. Linear Programming, Queuing (Waiting Line), Monte Carlo, Search, Information, Game, Probability and Sampling.
10. A tub-file resembles an old fashioned wash tub. Cards are usually filed vertically and indexed to enable easy reference. An inventory control application is one of the most prevalent uses. In this, the card usually represents a single item or a number of items as in a stock brokerage operation.



# Data Processing Is Not a World of Its Own

**A data processing installation must fit into the overall goals of the organization it serves.**

MEN WHO STUDY AND ANALYZE SYSTEMS are engaged in a many-faceted occupation. Basically, however, systems analysis consists of four main functions. These are: understanding and defining the problems; investigating in detail the present method; recommending and executing changes; constantly reviewing *all* systems used in the business. Sometimes the word "all" is overlooked.

With the up-surge of technological advances, we have come into a new era of specialization in the office. We have our production specialists, our time-and-motion specialists, our punched card specialists, our computer specialists, et cetera. Because of this it is often quite easy and natural to overlook the total because of all the detail.

In a modern office, the total may be compared to a chain made up of links such as billing, accounts receivable, payroll, materials control, purchasing, etc. Of vital importance is the fact that all links, in order to fulfill their purpose, must be strongly inter-connected with one another.

### Some Examples

Coordination between functions provides the groundwork for smooth, efficient and economical operation. It should be the responsibility of department heads and supervisors along with systems and coordination analysts to be aware of the importance of coordination.

One company in the liquor industry was proud of its fine modern offices which were carefully subdivided into diverse departmental structures. The various department heads were of a high calibre and worked together with a maximum of cooperation and a minimum of friction. After several years of expensive operation, one thing was finally brought to light by an extensive systems review.

Each department of the company was a smoothly functioning and independently operating unit. The order department processed orders, recorded quantities, determined priorities, etc. The billing department in turn converted the orders to punched cards and fed them through the machines swiftly and efficiently to produce invoices. Copies of the invoices were then delivered to the accounts receivable department for further processing and posting.

*(continued on next page)*

**By Raymond Dreyfack**

An analyst engaged in a study of any one of these independently operating units could easily have been misled into concluding that room for improvement was nil. In this case, however, as a result of the findings, a program for substantial improvement was instituted. The key lay primarily in the analyst's approach. He studied the departmental hierarchy—not only individually—but on a group basis as well.

For example, it was learned that much of the information required by the order department in its preliminary handling function was available as a by-product of the billing department's processing. Once the orders were translated by key punch machines to punched card form it was found that any number of run-offs could be made swiftly and economically to provide item and account statistics. These were formerly gathered only after large expenditure of labor and effort on the part of the order department personnel. Similarly, in writing an invoice the production of a punched card accounts receivable record was also a natural by-product. The accounts receivable historical information was of importance to the credit department.

These are obvious examples, generally known to accountants, office managers and systems people. Countless other instances also exist, some subtle and often unique to a specific industry or business organization.

**Responsibility for Coordination**

Larger companies generally have one or more individuals or management groups bearing the title and responsibility of "Coordination Analyst." The purpose of this job is just what the words say — to effect the coordination or integration of job functions among the many diversified sub-divisions of the company. Many firms, however, operate from day to day without any such actively working coordinator. In other organizations, theoretically, coordination is the responsibility of the office manager or some other working executive.

Often though, this responsibility refers more to the diplomatic soothing of personal differences, or the quick arbitration of business differences by a neutral third party. Rarely in such cases is the departmental systems machinery challenged. Most frequently this is because the executive involved has neither the time nor the detailed departmental information needed for such evaluation.

Where each department functions in its own small realm, it is good business sense that some evaluating body be made aware of *all functions*. It's also good business sense for the supervisor or department head involved to share this awareness, to his own personal advantage as well as to that of his company. The manager who takes the initiative with regard to change is always in a more enviable situation than the one who is content merely to go along with improvement when suggested by others.

It's not enough to know that all the business gears are turning. Analysts as well as supervisors should be well enough informed to enable them to pose the questions: Are all the gears meshing properly? Are they all needed?

How often does a department head shun a work load given to him by another department head for one reason or another? Assuming that all necessary business data is being provided, the question still remains, is it being provided in the easiest, most economical way by the department *most logically equipped* to do the job? Of equal importance, is information being duplicated because one department head is unaware of the related functions performed by another department head?

Last year an eastern corporation ordered a medium-sized computer to run its complex payroll. Programmers were hired or trained and made familiar with the intricacies of the set-up. They removed their coats and went to work. With the aid of some mental gymnastics and a sizable dose of "midnight oil," they eventually emerged with a routine that tested out to the happiest expectations of all concerned.

All the irregularities, which had been the source of innumerable supervisory headaches, were solved with breathtaking ease by the computer. Everyone was pleased except the head of the personnel department.

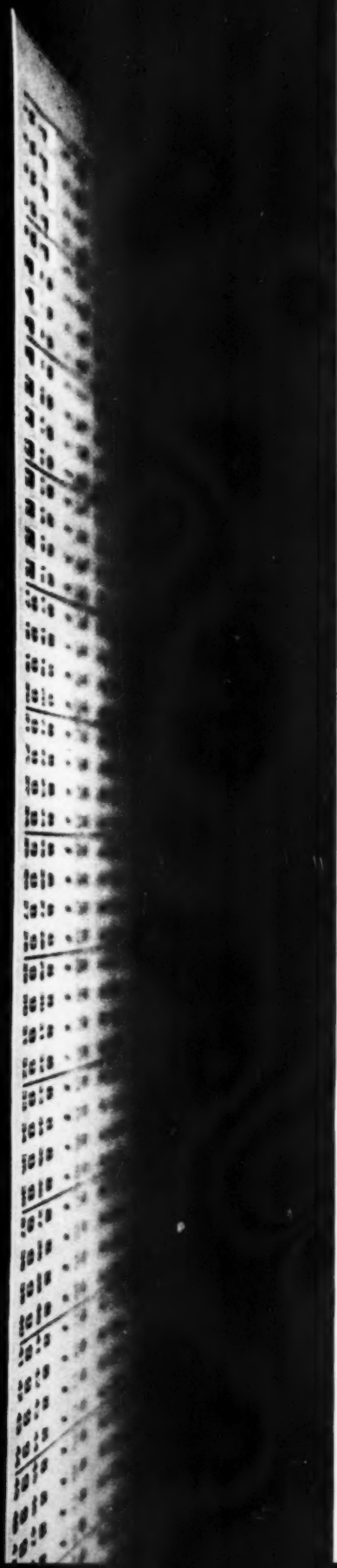
In the days B.C. (Before Computer), information regarding absences, vacations, classifications, rates, and a hundred other things was readily available. Now, with the payroll processed by a machine, much of the needed information was difficult to obtain.

Eventually, of course, these problems were resolved. Additional runs were provided on the computer, more programs planned, and more data converted in order to harmonize with the computer's digestive system. But the changes and alterations, though they did the job, were effected at great cost. If the problems were anticipated initially — all requirements could have been planned into the original program, at a far lesser cost both in planning and operation.

**The Need to Look at the Whole**

Virtually every company with both a payroll and a personnel department encounters this type situation. But how often does the personnel supervisor understand and appreciate all the functions and problems of his payroll associates, and vice-versa. Almost any transaction involving in any way the earnings of an employee is of concern to both the payroll and personnel managers. If an employee takes a day off, comes in late, goes on vacation,

*(continued on page 17)*



# THE CARD WITH SPECIAL BACKING

## IBM design, quality and service

**DESIGN**—the *right* design is essential to efficient data processing. From IBM's tremendous selection of standard and special cards, card sets, continuous forms, checks and special card features . . . skilled personnel, in one of IBM's many Card Design Centers, blend just the right elements into a design to best meet your specific needs.

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**SUPPLIES**

# NEWS SUMMARY

## GENERAL

**Computer system sales are up!**

Remington Rand has sold or leased over 250 *UNIVAC solid-state* 80 or 90 computers since July 1, 1959. Sales are at the rate of one a day. It has been noted that IBM has sold or leased approximately 2,000 of their *1401 systems* since its announcement. And RCA has sold or leased 40 of their *501 systems* for a value of $8,000,000.

The Supplies Division of International Business Machines Corporation is building a *new card manufacturing plant* in Campbell, Calif., to be occupied by late 1960. The plant will accommodate punched card manufacturing and warehousing operations now located at separate facilities in San Jose.

Over 2,000 bankers from the United States, Canada and several overseas nations visited Burroughs Corporation's Plymouth (Mich.) Division, to study Burroughs new Visible Record Computer system.

The Russian Government has placed an order for a *British National Elliott 802 computer*, a medium sized, transistorized, general purpose computer. It has been announced that substantial orders for National-Elliott 802 and 803 computers have also been received from the U.S.A.

## MILITARY

Four 7090's, together with additional computing equipment, will become the basic instrumentation for the *BMEWS data processing sub-system* for which Sylvania is the subcontractor of Radio Corporation of America, prime BMEWS contractor. BMEWS is a radar system designed to detect intercontinental ballistic missiles.

**Space Computing Center**

The Vanguard Computing Center has been renamed the IBM Space Computing Center. The Center is located at 615 Pennsylvania Avenue, N. W., Washington, D. C. Announcement of the new name was made by Charles Benton, Jr., general manager of the Federal Systems Division of International Business Machines Corporation, and follows the phasing out of the Vanguard project by the National Aeronautics and Space Administration some time ago. Successful launching of the last Vanguard satellite was made in September.

Statistics needed to maintain the U. S. Air Force *"manpower bank"* were placed on an RCA 501 electronic data processing system.

**Computers for military supply and data handling**

The Army unveiled an electronic data processing system as the heart of a new global *military supply network*. The new IBM 705 III computer at the headquarters of the U. S. Army Transportation Material Command communicates via wire and radio circuits with military installations all over the United States and on four other continents.

A Burroughs 220 electronic data processing system went "on the air" at Norfolk Naval Supply Center, one of the largest military supply services in the world, servicing bases and fleets in the Atlantic and Mediterranean Oceans, as well as other Naval groups and NATO allies in distant parts of the world. The Burroughs 220 will serve as the *data handling control* in this vast distribution system.

## NEW APPLICATIONS

The Atlantic Refining Company will install a combination of IBM's 7070 and 1401 data processing machines early in 1961. The equipment will provide the company with data processing, from *maintaining control* of over 30,000 material and supply items to mathematically *simulating* the refinery's operation for experimentation.

Scheduled for installation in the Policy Issue Department of Massachusetts Mutual Life Insurance Company in February, 1960 is an IBM RAMAC 305. In September the company will install the IBM 7070 system, which will function as a central source of reference and storage place for most data now contained in various departmental card records. The first application will be the automation of *premium billing and accounting*.

**Automation aids micro-biology**

The application of automation in *micro-biological testing* was reported at the seventh annual Antibiotic Symposium. The system utilizes an electronic computer to calculate laboratory data in six minutes which previously required 30 hours of work by technicians.

The turbidity readings and other data are fed in a continuous process from the photospectrometer and are entered on punched cards which are then processed by an IBM 650 computer. Center of the automatic production recording (APR) system is an IBM 9600 console. This work is being done at Charles Pfizer & Co., Inc., New York.

From left to right, William H. Ford, Assistant Treasurer; Allen A. Greenstreet, Assistant Vice President *(author of application)*; and William C. Creekmore, Auditor.

# SENSITRONICS AID BANK

**Posting time is cut in half! Burroughs F 4212 machines provide accurate method of true single posting.**

**By Allen A. Greenstreet**

RECENTLY we took a good clear look at our existing mechanical machine-pay procedures for handling commercial checking accounts and found many areas which required improvement. As a result of this extensive and detailed study, we installed *nine* F 4212 Burroughs Electronic Bank Bookkeeping Machines. Eight of these machines are used on line work and one for training, trial balances and miscellaneous work. These nine electronic machines replaced *twenty* mechanical machines.

The results received from these electronic bank bookkeeping machines have more than met our expectations. In essence, we have cut posting time in half by achieving the following factors automatically:

1. Form alignment
2. Old balance pickup
3. Verification of correct account posting
4. Six individual communication lights
5. Printed audit symbols
6. Electronic control of stop payments with printed symbols
7. New balance extension
8. Four-way register proof
9. Trial balance
10. Balance transfer
11. Service charge posting.

There are, of course, a number of additional advantages in our new electronic system, but of particular importance is that our staff formerly numbered 29 persons. Now it is 23. *The extra employees were assigned to other departments of the Bank.*

Of equal significance is that little training was required to operate the new machines. In most cases our operators were doing quite well after as little as three hours training.

Moreover, we have a concrete method of true single posting. Because of the local return item deadline we must process all checks before two p.m. Posting our 12,000 regular and 4,000 special checking accounts must be done rapidly and with accuracy. Under the new system our operators are finished in advance of the deadline hours.

Our previous commercial checking system, mainly a mechanical machine-pay procedure, was originally adequate, but the system was showing the

*(continued on next page)*

effects of steadily increasing work loads related to a gradual and consistent rise in checking account customers.

### The New System

We set up our electronic system gradually by first switching to an alpha-numeric account numbering system. The customers were informed of the new system and given an opportunity to make a selection from certain styles of checks. All checks and deposit tickets were imprinted and coded.

The next step was the setting up of the Burroughs statements, which contain the nucleus or memory of the electronic system. This nucleus is a set of three magnetic stripes on the reverse side of the form containing the account number, check count, account balance, balance symbol, posting line selection, alert notice *(if any)* and code checking facility. Our Sensitronics read this information which is electronically encoded and stored on the stripes. As the account is posted the new or up-to-date data is encoded in the stripes as well as printed on the statement and stub.

Here is how items are posted to a typical account with the electronic machines. The over-all procedure begins the previous afternoon when checks and deposits are sorted. These items are then turned over to the machine operators the following morning for posting. To post a check or deposit the operator first picks up the account number from the item, enters it into the machine and inserts the statement. From here on the machine takes over as it automatically and simultaneously reads and compares the indexed account number with the encoded account number. It then aligns the form to the correct posting line, picks up the old balance and check count and indicates via a communication light if there is any alert on the account.

As this is taking place the operator is entering the item amount on the free keyboard without having to wait until the verification is completed. If the two account numbers do not agree, the machine refuses to pick the old balance and a communication light on the keyboard lights up to indicate to the operator that she has entered the wrong number or has selected the wrong statement. In the event of overdrafts, filled statements or attempts to post alerted accounts, the machine also refuses to operate and an applicable communication light lights up.

Nine of these electronic bank bookkeeping machines replaced twenty mechanical posting machines.

After the machine compares the account numbers and the operator indexes the amount of the check, she merely depresses the last item motor bar to have the new balance computed and encoded on the magnetic stripes. The machine prints the new balance and item count on both the statement and stub, and immediately ejects the form while the operator is selecting the next statement. The identical data, besides being accumulated in the machine, is also recorded onto a proof journal which is a complete and detailed record of all postings. Totals of each entry category are printed on the journal at the end of the posting run to verify accuracy of items posted.

Posting service charges and transferring balances are accomplished on the new machines. Service charges are first computed by the tellers and then posted to the statements each month, approximately one week to eight days after the previous month's statements have been sent out.

In our system we have accounts broken down into 48 controls with approximately 350 accounts in each control. There is a control ledger for each group, and a master control ledger for the combined 48 controls. Each control is balanced as it is completed.

One of the biggest headaches in the previous mechanical system was the error factor related to old balance pickups. We were occasionally embarrassed when customers received inaccurate monthly statements. In addition to customer dissatisfaction, this caused many internal accounting problems, and the location and correction of these errors often occupied a great deal of costly staff time.

### Aims Accomplished

Our chief objective in installing the new equipment was to secure an accurate method of true single posting. Since errors were difficult to avoid with the operators using mechanical machines, the electronic machines, with their ability to pick up old balances and verify correct postings, were the logical solution.

The installation, now complete, is very successful and we are fully satisfied with it. The electronic equipment is, in the words of our President, Mr. Bruce Baird, *"in the interest of greater efficiency in our present operations and provides for anticipated expansion."* ■

COVER FEATURE

# SOLVING ADMINISTRATIVE PITFALLS

**As your opportunities for advancement beckon, beware of these stumbling blocks.**

AS DATA PROCESSING MEMBERS, WHAT KIND OF MANAGERS ARE WE? How well do we *administrate?* How well are we preparing ourselves for the jobs of top management levels which are there above us?

If we do not get these key jobs it's because we've underestimated the importance of management thinking, and not because they're sour.

This subject has been overshadowed in the field of data processing by the considerations given to technical matters. Certainly these technical problems are an important part of our lives; they are challenging; they call for the skill and imagination on which we pride ourselves; but they are only one facet of our profession.

To wire a 604 to predict the outcome of tomorrow's races calls for great skills, but an even greater reward, both in money and in personal satisfaction, comes from training an operator to become your successor. If management wants you to assume the job of controller or another top level position and asks if you have a man under you who can assume your present responsibility, the answer will be *"Yes"*. If the answer were *"No"* the chances of being asked in the first place would be nil.

### Personnel Management

These statements are intended to highlight one of the most important aspects of our jobs: the management of personnel. The machines we work with are certainly worthy of profound admiration. They are the result of some of our present society's greatest scientific productivity. But, keep humans away from them and what reports will be run?

Dealing with these human beings involves great effort and taxes our ingenuity. People have been

*(continued on next page)*

**By Owen Smith**

getting other people to do things since the beginning of time. In recent years methods have changed from forcing a man to do something to motivating him to want to do something which is good for himself and for his group. Mr. Russel Ewing wrote, for the American Management Association, *"To motivate others properly, the supervisor must discover something within each individual that arouses his desires, energizes his will, or serves as a basic motive to thought or action."* In dealing with administrative problems, we are dealing with human feelings and success may very well depend on how well we deal in human relations more than in the technical application of machines to record-keeping problems.

People are motivated in one of two ways — either negatively by fear or positively by hope of reward. To motivate through fear is to say a worker must produce or be fired. But this negative motivation is loaded with trouble. For example, it will stifle creativity and will intensify any personality problems that are associated with a sense of fear such as the feeling of failure, frustration or inferiority.

To motivate through hope of reward is to develop a desire within the worker to attain that sense of well-being that comes from improving his performance productivity and through loyalty to his company. This is positive motivation and results in a man doing his job well because he takes pride in his performance. This is dependent upon the harmonious relationship between the supervisor and his subordinates built upon mutual friendship, confidence, and respect.

#### First Impression

Let's start this consideration with the interview at the time a man comes in seeking employment. We sit across the table from a man we have never seen before and think, *"Is this man a potentially successful member of our team?"* If he has a criminal record, is poorly dressed, is drunk and does not speak well the task is easy — we turn him down. But suppose he is a Princeton graduate, has five years' experience as a senior operator, has a pleasant personality and appearance, and sounds eager. As a good manager, you think he's a *potential.* Now the job is to *make him successful.* Most of the time, if he does not succeed, it's *you* and not he who failed.

A new employee arrives at work happy that he has been hired and anxious to make his supervisor glad he hired him. Everything that is said and each incident that occurs during this new employee's introduction to his job has a tremendous effect — either good or bad — in motivating the new employee. It is extremely important that the new employee feels needed. Your actions and words must show that it is a pleasure to have him and his help is needed. It is important that time be set aside and devoted exclusively to taking care of the new employee. He should be introduced around and his job should be explained to him and should be related in terms of the total work operation. He should be made to feel welcome.

The worst mistake a manager can make is to lose touch with his subordinates after the first day. As the new employee progresses in his job, be aware at all times of his ability, his attitude, his happiness, his problems — even his personal life, to whatever degree he wants it known.

Your *confidence* and *respect* are necessary to his success. No one who lacks the respect of his subordinates can succeed. Often we confuse respect with fear. They are not the same. Respect means *"a just regard for worth; admiration, honor and esteem."*

A private in the Army may *show* respect for an officer because he has no choice, but whether or not he *feels* respect for the officer depends on the qualities of the officer. As managers you will succeed only if subordinates feel respect for you.

How is a man's respect obtained and maintained? There are many facets to this problem.

First, keep above reproach — both personally and in business. The higher in business, the more important this becomes.

Imagine two subordinates talking about you some evening. What are they saying? Are they talking about your wisdom, courage, industry, honesty, integrity? If they are, they respect you.

#### Loyalty — Up and Down

First, show loyalty to the company and inspire this same loyalty in your employees. It can safely be said that if you yourself do not feel loyalty to top management and to the company, go elsewhere where you *can* feel it or you will not succeed. Think of the people who have said to you, *"I work for a cheap, lousy outfit."* Were any of the people who said this important successful people? No! And you had little respect for them.

Instill this loyalty in subordinates and you will have a *team.* People who have a dedication toward a common cause seldom fail. The function of the data processing department is to contribute to the success and profit of the company by providing statistical and accounting reports which will guide management in their decisions. The role of the manager in this cause is to lead the team to the successful completion of these objectives.

#### Problem Solving

You will help the members of the team to be successful by encouraging team action in solving problems. Make each employee feel that he is participating. This gives each employee on the team a feeling of importance. It helps him to think creatively. In this type of atmosphere his contribution becomes specific in terms of the accomplishment.

A supervisor would do well in getting an employee started on his task by saying, *"Here's a problem."* Outline the problem and the objective desired, suggest an approach to its solution. Then conclude by saying, *"If you run into any trouble, come and see me and I will try to help you."* This will instill a sense of responsibility in the employee.

It is important to the development of an employee that he be provided with the opportunity for advancement. This can be done by maintaining a good training program. There is no saturation point to education. Each employee should be encouraged to further his education. He should be given the opportunity in his job to train for a more responsible position. If we are to properly meet our administrative responsibilities and at the same time serve our own interest in personal advancement, we should hire each employee into his present job with a planned educational program for advancing this employee to a job of greater responsibility.

**Appraisal and Enforcement**

To make the members of the team successful, you must regularly appraise the employee's performance, giving him the proper recognition for a job well done, and establishing performance measurements that will indicate where he stands in relation to the group as a whole. Analysis of these measurements should be made periodically and the supervisor should frequently discuss each man's work in a friendly manner, praising his good work and pointing out shortcomings. If you have the employee's respect and confidence, he will appreciate rather than resent your criticism. There is nothing worse for a man's morale than thinking he is a forgotten man. A good performance measurement will establish a healthy spirit of competition within the group.

**Need for Discipline**

When all the positive factors have been applied to an employee — and he's still lazy or careless or disloyal or in any way seems to be failing in his personal success, thus contributing to his team's lack of success — then *"lower the boom"* on him. Call him in the office and point out in no uncertain terms that you do not intend to stand for such behavior one more time.

You'd be surprised how many team members who are now successful once came that close to being fired but were saved because of a well-timed *"paddling."*

In conclusion, consider this point: If you have a sorter, an interpreter and a 704, chances are you'll give the most attention to the 704 because it's much more complicated than the others.

But it will be a cold day in you-know-where before any company makes an office machine more complicated and more important than the operator himself. ■

## . . . World of its Own

*(continued from page 10)*

takes a leave of absence or has an accident, both departments may be involved. Consequently, a system designed to issue pay checks only is not enough, nor is a system geared to the keeping of limited personnel statistics sufficient. All factors, and both functions, should be considered at planning, or set-up time.

In the manufacturing operation especially this over-all approach is needed. Sales and production, materials and inventory, purchasing and requirements forecasting, all are inter-related and must be integrated. The purchasing agent should know the problems of the production foreman. The same thing applies to the receiving head and inventory supervisor, the returns department head and the traffic manager. These are all links of the chain. How well they are connected is of interest to all.

Of vital importance, there must be a strong unit in the company, working freely with the blessings of top management and the *voluntary cooperation of supervision and line management,* whose job it is to understand the operations and problems of all sections. This unit must be able to join together the links from both a control and operational standpoint.

The cooperation of supervision and line management is not always easy to obtain. A two-fold task is necessary in this area. First, the supervisors and managers involved must be intelligently trained to understand the mutual value to all concerned in the establishment of a smoothly operating network of communication and coordination. The second task is a top management obligation. It involves the attitude or approach of the coordinating body.

The "know-it-all' is as justifiably unpopular in business as he is in the social hall or on the golf course. So is the "credit-seeker," the individual who attempts to build his own reputation by knocking the other guy.

The person who considers himself too smart to learn is most frequently too ignorant to offer good advice. To be effective a systems coordinator will discover that his most valuable tool is an open mind. He is a person who probes, considers and reflects. He *never* censures with criticism as an objective. If he indulges in ridicule the goat involved generally turns out to be himself.

The successful coordinator must first win the friendship and support of the people who will be instrumental in furnishing the research material that will guide him. Then, in conjunction with the supervisors and managers he is being paid to coordinate, he can start the rewarding job of connecting the links into a strong chain, putting into effect the overall concept that concerns itself not only with the parts, but with the whole.

De Paris on EQUIPMENT —A Regular Feature

# Hardware in the '50s

By Joseph R. De Paris

THE PAST DECADE will be recorded by historians as the most dramatic period in the art of processing data. In this short interval of time electronic technology became an established partner of business, government and science. So many electronic devices have been developed that it would be impossible to enumerate them. Every area of data processing has been exposed to the impact of electronic speeds.

It is amazing to realize the degree of acceptance already won by electronic devices. It is a tribute to the sagacity and courage of managers, analysts and data processors who so quickly recognized the potential and implications of these developments.

Those of us concerned with data processing and systems designing have at our disposal today an array of tools which staggers the imagination and offers continued challenge.

Probably the most significant contribution to the solution of paperwork problems has been made by the electronic computer. Electronic speed and vast storage capacity, coupled with the flexibility inherent in stored programs, have proved a combination capable of decimating paperwork. Properly applied, the unique abilities of the computer make possible the integration of normally separate operations into a single coordinated processing procedure. Not only is it feasible to simplify or eliminate procedural and peripheral operations, but it can be done economically at the same time new facts and reports are being generated.

The changes in the computer field are remarkable, viewed in retrospect from this first year of a new decade to the early years of the 1950's. Improved components, new storage mediums, and better balance between input-output process are just a few of the technological advances. Automatic programming and library routines now are accepted tools of the programmer, doing much to contract the time and cost required to develop a computer program.

We are a long way from the days when Remington Rand UNIVAC was the only computer available for commercial purposes. We can choose today from the offerings of a dozen other well-known, responsible suppliers. Systems are available covering the whole range from small scale, medium, medium-large, to large scale. Configurations within systems are in such variety that a best combination can be found for virtually any data processing situation. Pricing structures overlap to fit any corporate purse.

### New Dimensions

The approach to data processing has changed perceptibly several times in recent years. New dimensions have been realized as techniques and devices have been introduced. Random Access, as exemplified by disk storage, is a case in point. The pace of the entire data processing field is fast and furious. So dynamic is the field that it is a major problem to just keep informed superficially. We have been in the midst of a revolution, a revolution which has yet to spend its force. Based on what we have seen in the past and on the implications of the present, the future seems to offer promise that the systems man's millenium is at hand. You don't need the gift of clairvoyance to appreciate the impact of character recognition by magnetic ink and optical scanning, or of microminiaturization of components.

### Competition in the Medium-Size Computer Field

IBM's 650 has enjoyed preeminence among medium-scale computers. Over 1500 are in operation, making it the workhorse of data processing. Yet, fine machine though it is, it must be stated that the dominant position of the 650 has been aided by the lack of real competition in its field.

Under the American system nothing breeds competition like success. Remington Rand has taken after IBM and is determined to get its share of the 650 market. Two systems, the UNIVAC Solid-State 80 and 90, have been introduced putting Remington Rand solidly in this electronic derby. These systems are designed for users of 80 or 90 column punched card equipment respectively. Actually, they seem to be updated versions of the 650 and as

such are geared to compete directly and severely on the basis of speed, capacity, price, reliability, components and configurations.

Availability of these competitive equipments presents an opportunity to the user to exercise his privilege of choice. But it also creates a problem in selection! As we know, feasibility and selection of a computer have many aspects, not the least of which is the fact that in the final analysis selection must be based on the unique requirements of the using company.

Considerations of hardware inevitably come into play. It is necessary to compare and to evaluate. Here are some of the facts about the 650 and the new UNIVAC Solid-State:

**Comparison of the 650 and Univac Solid-State**

The UNIVAC Solid-State Computer is a general purpose, alpha-numerical punched card computing system. It is composed of four units; a Central Processor, a High-Speed Reader, a Read-Punch Unit and a High-Speed Printer. In addition, the system is available with tape input-output.

The 650 is a general-purpose punched card computing system available with tape input-output as well as RAMAC disk storage. The basic configuration consists of a Central Processor, a Control Unit, and a Read-Punch Unit. Additional components and printing units can be added to make up a fairly large system.

The internal memory of both systems is a magnetic drum. Remington Rand's has a capacity of 50,000 digits plus signs, organized in bands of 200 words. IBM's has a capacity of 40,000 digits plus signs *(increase from 20,000 recently announced)* organized in bands of 50 words. The UNIVAC has a standard drum area with average access time of 1.7 milliseconds and a high-speed area with average access time of 0.425 milliseconds. The 650's drum has one average access time, 2.4 milliseconds!

Both machines are fixed word length using a ten digit word plus sign. The instruction mode of both is based on a two digit operation code, four digit operand, four digit instruction address. Instructions can be optimally positioned for reduced processing time.

The UNIVAC Solid-State does not utilize control panels at all. This follows the modern trend of placing input-output format under program control. However, since all data enters or exits as one 80 column field, this can be costly in terms of processing time and storage space required to pack and unpack data by instruction steps. In the 650 the control panel is used to provide format control over a variety of input and output cards without the need for extensive program instructions.

The translation from card code to machine code and back again for output must be programmed on the UNIVAC; in the 650 this procedure is automatic.

Table Look-Up is an automatic operation in the 650; in the UNIVAC it must be programmed. The 650 has automatic sign control; in the UNIVAC it is programmed.

UNIVAC's High-Speed Reader operates at up to 450 cards per minute; 650 standard reader at 200 cards per minute. UNIVAC punches at up to 150 cards per minute; the 650 punches at 100 cards per minute. UNIVAC's Printer operates at 600 lines per minute; the 650 at 150 lines per minute.

Both systems offer automatic programming routines to users.

These are just a few of the similarities and differences. Their significance or insignificance depends upon the needs of the potential user. Often the only way to make a determination is by actual programming the same applications on both systems.

The important point is this: If you are looking toward a medium-sized computer, you had better look at both 650 and UNIVAC Solid-State. ■


Special Announcement . . .

**CLASSIFIED ADVERTISING**

As a service to readers, classified advertising in certain categories will now be accepted. These include:

**EMPLOYMENT OPPORTUNITIES**
**Positions Offered — Positions Wanted**
**USED EQUIPMENT**

Rate per line: $2.00 (five words per line). Minimum four lines, payable in advance.

Publication Box No. service $2.50 extra. (Inquiries will be forwarded *unopened* to you.)

DEADLINE: 1st of month preceding month of issue. (All advertisements subject to publisher's approval.)

**CLASSIFIED ADVERTISING ORDER FORM**

**GILLE ASSOCIATES, INC.**
**956 Maccabees Building, Detroit 2, Michigan**

Please insert advertising in the classified section of Data Processing:

☐ Position Wanted ☐ Position Offered
☐ Used Equipment
☐ Other_____
☐ Please have inquiries directed to Box No. and forward to us. Payment is enclosed totaling $_____.

Name_____ Company_____
Address_____
City_____ Zone___ State_____

# Material Coding for Data Processing

## A "Do-It-Yourself" for the Big Step

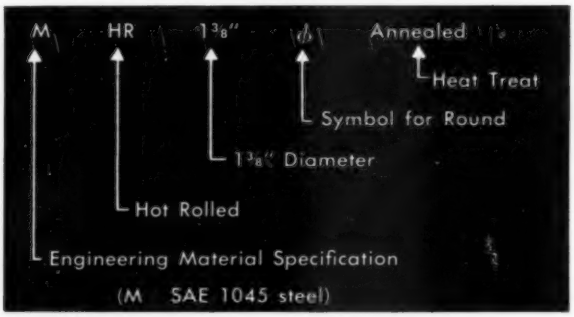
AS PART OF THE TRANSITION from a manual inventory control system to a computerized data processing system, it is often necessary to revise, to one extent or another, a considerable portion of the existing coding systems. Coding of material under a manually posted ledger card system is developed around basic descriptive symbols and digits only to be modified by the individuals keeping the records according to their personal interpretations. The result of this individualism is the development of an organized set of files unique for the most part to those who keep these records.

While standardization and simplicity are both inter-dependent, normal business logic and particularly data processing techniques strive toward an equal balance of both: standardization for the maintenance of accurate and consistent records; simplicity for the ease of understanding. The reach for standardization and simplicity must be tempered by the costs and problems involved with the change from the existing system to a standard and simple system. The greater the change in the nature of the descriptive coding system, the more pronounced will be the problems of changing records and retaining personnel with less real gain by the improved data processing flow. Usually, a compromise between standardization, simplicity and changeover is the acceptable solution.

**By William H. O'Keeffe**

### Manual Code

The Elmes and King Division of American Steel Foundries has had an alphabetic coding for the material description and the usual assortment of digits, fractions and symbols to describe all bulk material items. For example:




**Example 2:**

M-HR-1.375"$\phi$ Turned and Ground

This material is the same as above except that decimals are used to indicate the special surface treatment.

**Example 3:**

M-CR 1⅜" x 10¼" Rect.

This material is basically the same as above except that it is rectangular in cross section instead of being round.

It is obvious from the above that it would be practically impossible to process material descriptions of this type through a data processing system.

**Adaptation for Accomplishment**

The basic material description currently in use at this plant has been retained to minimize *"changeover"* problems. A twelve digit material description code was developed around the existing coding which uniquely describes each item of bulk or raw material.

The revised material description coding is as follows:

| X | X | X | X | X | X | X | . | X | X | X | . | X | X |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 8 | 9 | 10 | | 11 | 12 |

**Columns 1 and 2:** An alphabetic engineering material specification as currently in use

**Column 3:** Form or shape code
- 1=round
- 2=square or rectangular
- 3=hexagonal
- 4=plate and sheet
- 5=wire
- 6=tubing and pipe
- 7=forging
- 8=casting
- 9=miscellaneous including structural

**Column 4:** Surface finish
- H=hot rolled
- C=cold rolled
- T=turned and ground

**Column 5:** Heat treat condition
- H=heat treated
- A=annealed
- N=normalized
- S=stress relieved

**Columns 6 - 9 Incl:** O. D. gage, hex *(across flats)*

**Columns 10 - 12 Incl:** I. D., width, wall thickness

The size fields, columns 6 - 9 and 10 - 12, inclusive, carry only two decimals since the smallest size increment carried in stock is 1/32", also, there is only one field for a size of 10" or larger since we have no occurrence of rectangular or square bars with more than one dimension of that range. Steel plate is identified by width and thickness.

The above illustrated examples would be described as follows:
*(- represent blanks)*

**Example 1:** Old M- HR 1⅜"$\phi$ Annealed
New M- IHA-1.37---

**Example 2:** Old M HR 1.375"$\phi$ Turned and Ground
New M- IT 1.37---

**Example 3:** Old M CR 1⅜" x 10¼" Rect.
New M- 2C 10.25 - 1.37

For convenience in reading, a blank space is provided between the last digit of the first size field and the first digit of the second size field. Thus, thirteen printing positions are required but only twelve card columns. Castings and forgings are also described using the above coding but without reference to any dimensions since the appropriate engineering blueprint supplies the necessary descriptive information.

The resultant material description coding was developed around an existing system, standardized and simplified, compromising between data processing and operating department needs. While a straight numerical coding would have been preferred for data processing, it is believed that the re-education and associated *"changeover"* problems would have more than offset any such advantages.

The manufacturing routings issued to the factory will contain the new material description but will also contain a first line printing of the present material description to permit the operating departments to familiarize themselves with the new description without entirely withdrawing the old coding. ■


BEEMAK TAB CARD HOLDERS

BP-100 CARD HOLDER

Can be attached to products, conveyor belts, bins, boxes, shelving, to implement production control, inventory control, invoicing and other punched card systems. Beemak Holders have withstood hard usage for eight years and are made in ivory, red, green, blue, yellow and black for color coding if desirable. Keeping correct tab cards at the source of record data provides better controls and faster handling of all types of merchandise.

BP-130 MAGNET HOLDER

Card holder with four heavy permanent magnets can be attached or hung on any metal surface such as tab machine, filing cabinet or metal desks. Provides finger-tip accessibility to operators, reduces wasted time and chances of error.

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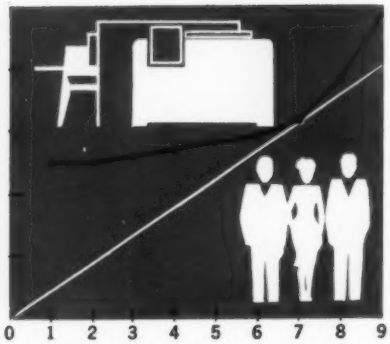


# Work Measurement in a Data Processing System

## An Aid in Scheduling and a Performance Yardstick for both Personnel and Equipment

WITH THE EVER MOUNTING VOLUME OF PAPER WORK to be processed and a limited supply of manpower, it has become increasingly necessary to have the tools required to determine work loads ahead and to plan the machine and manpower scheduling to process them. To gauge whether the planning has been adequate and based upon good predetermined time factors, the administrator must sit back and look in retrospect at a performance record which will give him the answers. Because of these requirements, work measurement is being used extensively in the control of data processing operations as well as in most phases of general paper work handling. In fact, its use as a management technique is even more important in a data processing system where expensive machines as well as personnel are utilized in the paper work digestion process. Work measurement programs have been inaugurated in many areas of our organization and one in which it has been serving a most useful purpose has been in the punched card department of our data processing center.

### Application to Punched Card Department

A work measurement program was instituted in our punched card department a little over a year ago after several months of planning and establishment of work standards with the help of an outside management consulting firm. At the time that this program was embarked upon, it was expected that we could establish:

1. A realistic time standard for each job being processed through the punched card room
2. An aid in determination of work loads in the machine room by consideration of:
   a. Machine requirements to process work loads
   b. Personnel requirements to process work loads
3. A means by which we could forecast availability of facilities for special jobs or loading for additional applications
4. A record of work carryover or backlog status
5. A measurement of the effectiveness of individual employees as well as the department as a whole
6. A guide to measure the effectiveness of supervision.

All of these goals have been accomplished, and more, with the completed installation of the program. By the use of work measurement we are able to predetermine loading of work to specific machines and specific personnel to meet schedules. We are in a position to provide top management at the data processing center with a daily report of work in process, of jobs which are falling behind, reasons therefore, and corrective action taken where required.

Before we could arrive at this position, and prior to installing a work measurement program, it was necessary to determine the specific jobs which would be passing through the machine room at a specified time. Our purpose was to establish standard time for the handling of each job. The standard time was arrived at by preparing recordings on prescribed forms of the total time required to process each job. Several recordings of each job

By Cecil Miller

were taken over a period of time and an average was established for the standard time to be used for each. With a sufficient number of readings, it was believed that an average could be reached which would be a realistic standard. A problem to be encountered in a program of this type is a variation in volume that is bound to occur from time to time. For this reason it was necessary to set standards which would compensate for these changes in volume as the condition occurred.

The established standards include time used by an operator for machine set up, machine running or any clerical work that might be required of the operator to successfully complete the job. In our system this latter time is held to a strict minimum by having a clerical section which handles most work of this type.

In total the individual jobs in the punched card department amounted to approximately 475 reportings of varying volume and completion time requirements. The usual daily, weekly and monthly reportings appear in our schedule as well as those required at quarterly, semi-annual and annual intervals.

Another problem which confronted us was that a great deal of our punched card work is of a non-scheduled or of a one shot service bureau nature. This is due to the fact that our centralized data processing center is designed to serve our several division and plant locations. Where a standard has not been determined in advance, we have found it necessary to use estimated standards for a special or one time job as it occurs. The experience of our supervision has made exceedingly accurate the estimating of such standards.

The job of developing the details for establishing standards for all schedule purposes and with a varying volume was time consuming. However, it was also very enlightening, for many operation conditions requiring correction were revealed.

### How It Works

When the program was ready to be installed we were in a position to prepare job sheets each day for the work scheduled to be processed in the machine room on the following day. The job sheet describes the job number, the machines to be used, and the standard amount of time to process the work. As the floor supervisor assigns the work he fills in the name of the individual operator and the starting time and completes the job sheet when it is returned to him. If the floor supervisor is unable to determine by reference to the standard time file that a standard has been established for the job, he estimates one and compares the actual with his estimate after the job has been completed. After the processing of this same job has been performed several times and the estimate and standard appear to be in line the job becomes standardized and is so set up in the file on a permanent basis. Whenever a shift changes and a job remains incomplete, it is the responsibility of the supervisor to estimate the completion point of the job to close out his shift, and to prepare a new job sheet with an estimated completion time to be used by the succeeding shift. In this way there is no carryover from shift to shift and the performance can be allocated to the specific shift in which the work was processed.

At the end of a 24 hour period the completed sheets are routed to the data control department where a clerical operation develops the performance of the machine department during that day. A daily report is prepared showing each operator's name with his available work time, the hours worked on standard, the hours earned on standard, and the hours worked on non-standard. In addition to this a percentage is shown relating hours worked on standardized jobs to hours worked on non-standardized jobs. We are still showing approximately 15% of work which is not standardized but it is expected that in a short period of time all work will be standardized on an actual basis. The supervisor of the punched card department and the manager of the data processing center receive a daily report which shows the effective percentage of each individual employee and the performance of the department as a whole.

Another thing which is extremely helpful is a report made available at eight o'clock each morning of the backlog or carryover status of jobs which were scheduled but have not been completed during the previous 24 hours. This report includes reasons as to cause and corrective action taken.

By reviewing these two reports the data processing manager can tell what work is not current and also the performance of the department during the preceding 24 hours. One area of the carryover report details the jobs which are non-scheduled and appear under the work ahead to be processed when time permits. Non-scheduled work can usually be done only on an overtime basis or during the off peak period of the month.

### Benefits Gained

With the completed installation of our work measurement program, we have been receiving a number of important benefits that were not possible prior to its installation. A very important benefit is our having the tool available to predetermine our work loads. On a monthly basis we are now able to equate that load to the number of persons and machines required to do the processing. There has been a substantial reduction in the number of personnel in the punched card department with a comparable reduction in the amount of punched card equipment that we have in operation. This reduction has been made effective with no dis-

advantage to our maintenance of output schedules. In fact, our output performance has been improved since we have been able to look at the status of each individual job in an objective manner.

As a result of the detailed reports which are now made available to the manager of the data processing center, it can be readily determined when additional machines and personnel are required or, conversely, when a reduction of either or both of these may be safely made. One area in which the performance analyses have proved invaluable has been in the justification of overtime at peak periods or when some unusual unforeseen requirement arose. It is believed that as long as our department in total is operating at the efficiency of 100% plus, no additional work can be brought into the unit without some special arrangement being made for further staffing or for overtime. Reference is again made to the peak period of the month for adequate staffing can not be set up on a permanent basis to meet this requirement under any economic circumstance.

One factor of consideration resulting from the installation of our work measurement program has been the rise in the morale of the operation personnel in the punched card department. Rather than a resentful attitude arising as a result of the installation the opposite condition has been true. There has been a tendency on the part of the employees to have more interest in the operations that they are performing and certain rivalry has been set up by the operators in an effort to accomplish the greatest percentage of efficiency. The operators have taken greater pride in their work and every effort has been made by them to produce quality work while meeting or bettering the time standards that have been assigned to the individual jobs.

An item of value in control of operations is the daily backlog report. By the use of it, the supervisor can immediately pinpoint trouble spots of reportings which are not meeting schedule deadlines. These items, many times, may be the result of late input which has an adverse effect on schedule control. However, other reasons for missing dates such as machine breakdowns, procedural failure or excessive absenteeism may appear after the fact and steps are taken to correct a condition wherever possible and to minimize the impact when it happens in the future. As soon as a reporting appears on the backlog list it is the responsibility of supervision to alert the recipient of the reporting as to its current status. He then takes immediate action to complete the report at the earliest possible moment and prepares for its transmission to the location where the report is to be used as quickly after its completion. The department supervisor is in a position to use the backlog report the first thing each morning in making any necessary changes to the schedule which has already been established for the day.

The main area of interest is in the measurement of the performance of the individual as well as that of the department as a whole. This measure of attainment is reflected in a percentage figure which, when plotted over a period of time, becomes an indicator of the trend of individual and departmental performance. This becomes an integral part of the supervisor's judgment factors when considering an employee at the time of re-rate review. In addition, it is used by him on an interim basis to check an operator's performance and to discuss with him any merit or demerit that may have been indicated as the result of the performance report.

From time to time requests are made to our data processing center for additional punched card services. These tasks may vary in scope from a small volume one time job to a large non-current one, while others may require a permanent daily, weekly, or monthly schedule with a volume running from small to extremely large. On all occasions, we are able to measure the amount of manpower and machine time required to do this processing and the resultant time and cost picture can be shown to the management of the center and the person or location requesting the work be done.

It has been shown to our organization that the total benefits derived from our work measurement program have been limitless. Our areas of supervision and control in operations have been greatly strengthened with the tools which are available to make decisions with a maximum amount of background information.

**Incentive Program Possibility**

Although we have no office incentive plan in our own organization, it would be very possible to use a work measurement program in the handling of an incentive system. The work planning and operation of a punched card department is analogous to a production machine shop and many of the same conditions of operation exist.

In any case, the output of any department is machine limited and the effort to increase production must be directed to keeping machines running productively. An incentive plan would be designed to induce the supervisors and the operators to maximize machine utilization and to provide them with a share of the profits resulting therefrom. Specifically, the savings in the form of increased production must result from minimizing set-up time, idle time, re-run time and any other time factor which may tend to reduce good production output.

The incentive plan should be so devised as to reward the operator and the departmental supervision for productivity in excess of the standards

*(continued on page 37)*

# CREATIVE DRIVE:

## The Yardstick of a Manager's Value to His Company, His Installation,—and Himself

**By Raymond Dreyfack**

ERNEST HEMINGWAY is a very creative guy. So is Picasso, and ditto, Leonard Bernstein. No one will contest these facts. They are universally known.

But if the statement were uttered that Joe Smith, data processing manager at the Secaucus Corporation, is also a very creative guy I wonder how many doubting Thomases would turn up their noses? Well, happily, when all the facts are made known it might well be that the nose-turners will find themselves peremptorily squelched.

At long last the fallacy that artists, writers and musicians have the corner on creativity is being exploded right in the face of the intellectual snob. Government and industry today, large and small alike, are coming to realize that not only does creativity play a vital part in the operation, but that for an organization to measure up to the demands of modern competition, *creative management* is a blessing to be sought after and rewarded.

Noah Webster defines the word, create: *To invest with a new form, office, or character.* Suppose we see how Joe Smith at Secaucus Corporation lives up to this definition.

Let's take the payroll job that is Joe's responsibility. If we go back to last year we'll discover that, in order to determine the company's vacation schedule, a gal in Personnel had to sit down with a bunch of employee records for about three weeks. She had to manually determine who was entitled to one week, two weeks and three weeks respectively, then review her findings with the Personnel Manager. After this, a typist had to sit down and prepare lists. A rather exhaustive procedure.

Now Joe very easily could have sat back and relaxed on his big fat chair, and said to himself: Why should this be my problem? Let Personnel continue to work out the schedule; they've been doing it for twenty years.

But this is no course for our Joe. Joe is an original thinker, a *creative* thinker. Joe reasons thusly. A member of the NMAA, and an avid reader of his trade publications, he has learned that the word, *Integration,* is not at all controversial when it refers to Data Processing.

Joe runs the payroll. A byproduct of this application is the automatic recording and history of weeks worked. "Date Started" is punched in the Payroll Master file. The rest, my friends, is history.

Happily beaming his enthusiasm, Joe is off on a creative whirl. The way vacations are handled at the Secaucus Corporation today is a joy to behold. Ditto, sick leave, and many other refinements, all hinging from the *integrated* Payroll-Personnel application.

What's in it for Joe? Well, job satisfaction, for one thing. The knowledge that he's saved his company money, and that his boss respects the job he's doing. More responsibility too, the broadening of his scope. And, oh yes, incidentally, he's just been put in for a nice fat raise.

No question about it. In his own way, Joe, engaged in satisfying *original* thought, is as creative as Gershwin was when he wrote *The Rhapsody In Blue.* Well, almost.

Why is creativity so important in business today? Why is it of special importance in the field of data processing? For one thing, creativity is the end product of ideas, and ideas are the springboards of success, with all the S's crossed.

If the sales manager gets an idea for a new promotion it's reflected on the P. & L. statement. If the plant manager gets an idea to produce a product more economically, this too has its dollars and cents tie-in. So it follows, all along the line.

*(continued on page 37)*

# NEW...
# Data Processing HANDBOOKS
## for Specific Industries and Specific Applications

For years we have received requests for information related to a particular industry or a specific type of application or other subject. These requests have come in correspondence from readers, in mail surveys we have conducted and from our field representatives.

You have, undoubtedly, discovered that your need for information is most acute in certain areas more than others.

Every field of business has data processing needs that are peculiar to that type of business. Although it is desirable occasionally to cut across other types of industry, one is first concerned with the needs in his own field.

The following **INDUSTRY HANDBOOKS** are now offered: Manufacturing, Distribution, Insurance, Government, Transportation, Utilities, Banking, and Education. Handbooks for other fields will be developed as the need arises and when sufficient information can be obtained to present a balance of material for that field.

Each **INDUSTRY HANDBOOK** contains an editorial appraisal of the situation that exists in that industry plus a comprehensive section on data processing equipment useful at all levels of management.

**APPLICATION HANDBOOKS** currently offered include: Accounts Payable, Accounts Receivable, Billing, Coding, Collections, Inventory Control, Order Processing, Payroll, Production Control, Sales Analysis, Withholding Tax and Social Security, Wiring Tips and Techniques, Forms Improvement, and Supervision.

Every effort has been made to effect as good a balance as possible in each application handbook to include a variety of types of business and types of equipment. Punched card, punched tape, and computer applications are presented complete with all necessary forms, diagrams, and other illustrated matter.

Never before has such an extensive library on data processing methods been available. It is possible now only by drawing from the large volume of material that we have obtained and published during ten years of operations in this field.

The editorial work on all handbooks listed above is nearly completed. Delivery on most handbooks is expected by March 31st.

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# The Forms Salesman

**By Ray Marien**

TALK ABOUT A MAN ON A TIGHTROPE and you visualize someone with infinite skill at traversing dangerous areas. Think of the globe-girdling diplomatic trouble-shooter and you picture a man who is adept at the niceties of shadow-boxing with his own or his country's life in the balance. I could point out a couple of other occupations where skill, tact, finesse, diplomacy and just plain *"guts"* are required, but I think these two examples will give you the idea of the kind of man I'm thinking of. Only my man occupies another niche in life. He is the business forms salesman.

Sorry, if you feel a bit let down at this but it happens to be pretty close to fact. Imagine for a moment the job confronting the average salesman of business forms. In today's office he not only has to convince the purchasing agent of the quality of his product and the sharpness of his price, he has to make the same kind of sense to the data processing supervisor and the forms control specialist. He has to please *all* three. This is not only a well-nigh impossible chore, but it's also an *expensive* one. Just how many of these men should he take out to lunch?

Seriously, suppose he convinces the purchasing agent, what good does that do him unless he's also got the data processing man in his corner? For unless the data processing man likes the forms he's getting, the account goes out the window. As for the forms man, well, if he feels he's been bypassed, he'll go off into his cubicle and pout, but not before he's through picking the form apart from every angle.

That is the forms salesman's dilemma. He's in the midst of a beautiful triangle. He's not only got to satisfy all three, he's got to make them feel that each is the most important man to him in that organization.

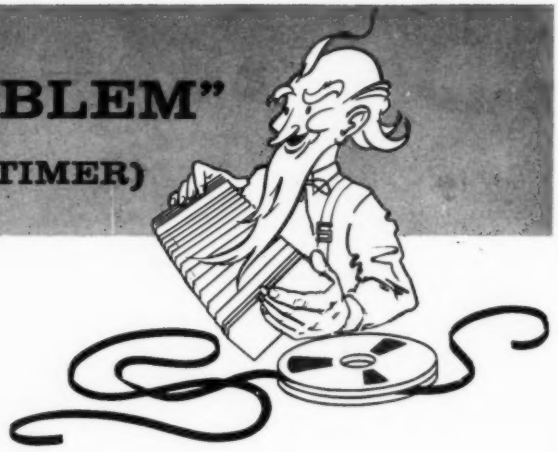
Years ago, it was common practice for the forms salesmen to bypass purchasing completely and get their business by the back door. They visited the data processing head, or the accounts payable supervisor, the men who actually *used* the forms and gave *them* their sales talks. All the purchasing agent did was to act as a rubber stamp. Some took it hard. Most just took it in stride, recognizing that it took a lot of detail work off their hands. The dividing line between the two types of purchasing agents was clearly marked. The buyer who was most irritated was usually the buyer who knew a lot about forms printing and had the time to handle such an order properly. The buyer who let these occurrences slide off his back generally was *not* an expert at buying printing and in most cases was too strapped for time to handle all his orders the way he would have liked to.

The advent of the forms control man is perhaps the biggest factor in the return of forms buying to its rightful place — the purchasing department. With established procedures for forms ordering, and with knowledgeable people able to write proper specifications to facilitate the purchase of forms, there is no longer any excuse to bypass the purchasing agent. The buyer can now do a *better* job, no matter how busy he is, and the forms man can and does work right along with him to prevent back-door selling. The printer who believes he can still make his calls and do a proper selling job without seeing the forms control man and the printing buyer will have small reason to wonder why he's not getting any orders. He should remember that each of *three key men* play a special part in a team effort. The data processing supervisor, as the man responsible for using the most expensive forms in his company, has to be sure they work well in his machines. The forms man, having the responsibility for control over design, quantity and specifications, has to be consulted in his own right, especially where *"spec"* changes are contemplated. The buyer is the man entrusted to purchase the forms. Buying is his profession and he can't do it properly unless he gets bids and equates them, and then chooses the winning vendor.

The smart printing salesman gets to know *all three* and learns how to work with them. ■

# "I'VE GOT A PROBLEM"

## (with Advice from the OLD TIMER)



Your Old Timer has had a great deal of correspondence from readers who point out the need for top management education in data processing.

Here are a few quotations from correspondence we have received:

"A general need exists for management education — so that data processing can operate in a more intelligent atmosphere." "Manufacturers belittle the data processing manager to top management." "Importance of data processing managers is undersold while pushbutton advantage of equipment is oversold." "The men who make most decisions are poorly informed and do not respect facts presented by data processing managers." "Development — is badly needed to give management better methods than dollars and time to evaluate the effectiveness of the data processing department." "Top management does not realize that a computer is only as good as the information available to it."

These are but a few of dozens of similar comments we have received from readers.

We invite your participation in a *"brain storm"* on this problem: "How Can Management Be Made More Aware of Data Processing Realities?"

Let's keep brain storming ground rules in mind. They are, briefly, **(1)** Stick to the problem. **(2)** Avoid mere criticism. **(3)** Find a large quantity of alternate solutions. **(4)** Let your imagination run wild, submit any ideas that occur to you regardless of their apparent practicality.

You might want to ask yourself the following questions in seeking solutions:

What can the *individual* do?
What can *manufacturers* do?
What can *associations* do?
What can *publications* do?

We will publish as many of the ideas submitted as possible and will forward suggestions received to all organizations in the data processing field that are appropriate.

**Dear Old Timer:**

We receive many calls from people who want information on colleges and universities that teach data processing and the courses that they carry. Can you help us on this?

A. G. Raffensperger
Tulsa Technical College
Tulsa, Oklahoma

**Comments:**

No complete list is currently available. We are in the process of compiling such a directory, however, in conjunction with a basic text on the principles of Punched Card Data Processing. We hope to have this directory in time to include it in the next volume of the ANNUAL. Here is a partial list in the meantime:

### COLLEGES AND UNIVERSITIES TEACHING DATA PROCESSING

**A & M College of Texas**
E E Department
College Station, Texas

**American University**
1901 F Street, N. W.
Washington 6, D. C.

**Bridgeport Engineering Institute**
240 Fairfield Avenue
Bridgeport, Connecticut

**Canisius College**
Buffalo 8, New York

**Dundee Technical College**
401 Bell Street
Dundee, Scotland

**Illinois Institute of Technology**
3300 South Federal Street
Chicago 16, Illinois

**Johns Hopkins University**
McCoy College
Baltimore 18, Maryland

**New York University**
Division of General Education
Washington Square
New York 3, New York

**Northwestern University**
Weboldt Hall
339 E. Chicago Avenue
Chicago 11, Illinois

**Pace College**
41 Park Row
New York 38, New York

**University of Houston**
Houston, Texas

**University of Michigan**
2038 E. Engineering Building
Ann Arbor, Michigan

**University of Pittsburgh**
Pittsburgh 13, Pennsylvania

**University of Rhode Island**
Kingston, Rhode Island

**Rutgers State University**
University Extension Division
53 Washington Street
Newark, New Jersey

**Seton Hall University**
School of Business Administration
South Orange, New Jersey

**Sir John Cass College**
Jewry Street
Aldgate
London, E. C. 3, England

**State College of Washington**
Pullman, Washington

**Texas Christian University**
Box 336
Fort Worth 9, Texas

**University of Bridgeport**
Bridgeport 4, Connecticut

**University of California**
Room 100, Building T-11
Berkeley 4, California

**University of California**
At L. A. Extension Division
Los Angeles 24, California

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College of Arts and Sciences
Denver 10, Colorado

**University of Detroit**
Evening College of Commerce and Finance
651 E. Jefferson Avenue
Detroit 26, Michigan

**University of Sidney**
Adolph Basser
Computing Laboratory
Sidney, N. S. W., Australia

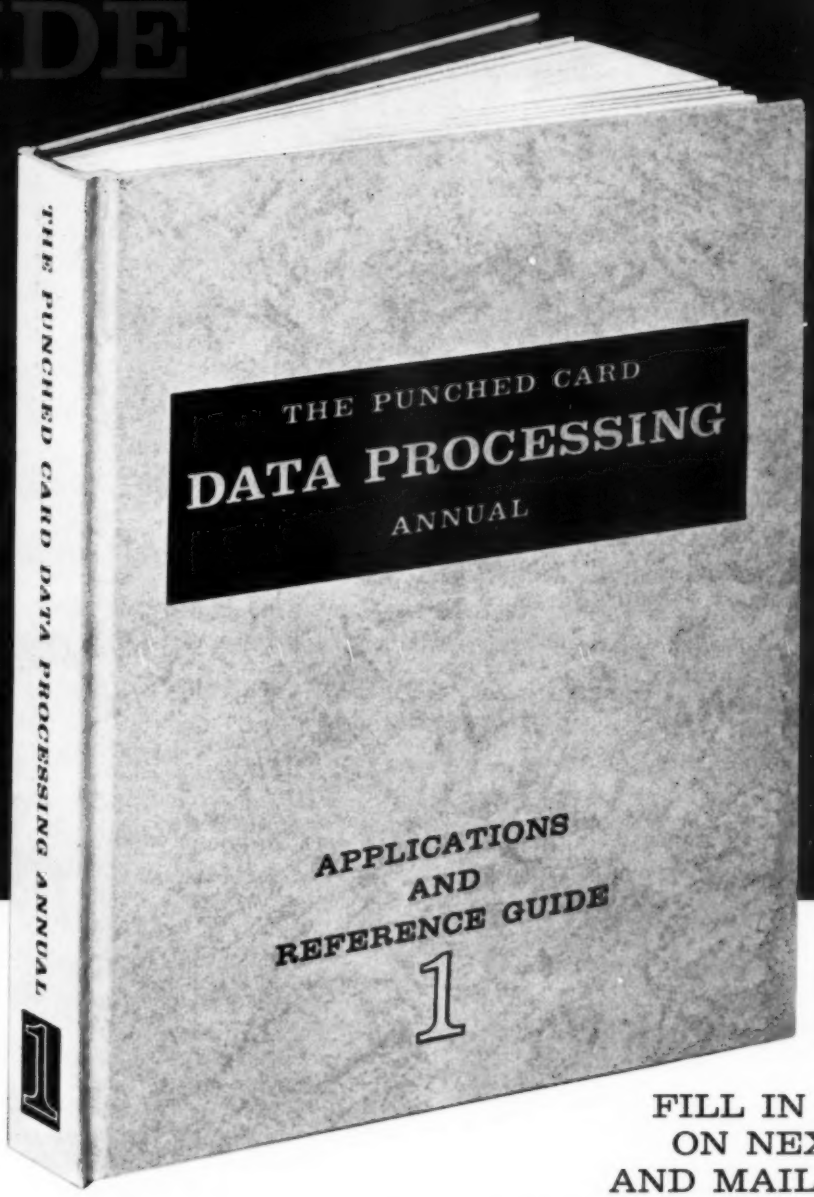
**University of Syracuse**
University College
601 E. Genesee Street
Syracuse, New York

**Whittier College**
Whittier, California

■ ■ ■

NEW...

# PUNCHED CARD - DATA PROCESSING REFERENCE GUIDE

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# PRODUCTS & SERVICES

**NEW COMPUTER FOR BUSINESS**

The solid state IBM 7080 data processing system was announced by International Business Machines Corporation. It is designed specifically for business with processing speeds up to ten times faster than the IBM 705 systems.

Design techniques that give the 7080 its capacity include:

Communication Storage, a memory which can transfer information between tape units and main data storage at a 1.09 microsecond character rate, thus up to five tape units can be reading in or out simultaneously.

A main memory from which any of up to 160,000 characters of information can be called into the central processing unit in 2.18 microseconds.

Priority Processing, a system which achieves simultaneous reading, writing and processing operations and permits input/output devices to control the flow of programs.

### Additional Features

The new concepts in the 1.09 microsecond communication storage enable the attachment of input/output devices and provide the basis for the priority processing system.

As a result, the 7080 can take in or feed out information to or from sources such as its magnetic tape units, process and transmit data internally, all at the same time. The 7080 is designed to accept 705 I and II programs and internally process them ten times faster, and 705 III programs six times faster.

The 7080's main memory speed of 2.18 microseconds compares to seventeen microseconds on the IBM 705 I and II systems, and nine microseconds on the 705 III. A magnetic core memory of either 40,000, 80,000 or 160,000 characters is available on the new system. The 705 I has a storage of 20,000 characters, the 705 II has 40,000 and the 705 III has an 80,000 character storage.

The 7080 system has three modes of operation — 705 I and II, 705 III and 7080. The operator can establish either 705 mode by pushing a compatibility switch on the console.

### Available Programs

Major 705 programs which will operate on the 7080 system include Autocoder III, Input/Output Package, Decision Making Language, FORTRAN, Report Generator, File Maintenance System, 705 Processor, Utility Programs and Sort and Merge Routines.

The solid state 7080 needs only fifty per cent of the air conditioning and power of its predecessors, and thirty per cent less space. Tape and tape unit compatibility is achieved between on-line and off-line equipment because the 729 II and 729 IV tape units are used in both systems.

The 7080 can be utilized with IBM 1401 off-line printing, punching and card-to-tape conversion equipment.

### Operating Speeds

In one *second*, the 7080 can:

—read or write 312,500 characters of information
—make 303,000 logical decisions
—add or subtract 78,000 six-digit numbers
—multiply 7,100 six-digit numbers.

### Prices

A typical 7080 system will sell for $2,528,000 or rent for $55,500 a month. This includes the central processing unit, magnetic core storage, console, two tape control units and twelve magnetic tape units. A basic system will sell for $2,233,000 or rent for $49,100 a month.

**NEW TAPE DRIVE**

A new magnetic tape transport that is expected to increase the life expectancy of magnetic tapes used with electronic data processing systems was shown by Datamatic Division of Minneapolis-Honeywell. The

tape transport, first unit of the Honeywell 800 data processing system to be publicly demonstrated, reads or records information at the rate of 96,000 decimal digits per second. Several of these units may be used simultaneously to supply or receive information. The company also made a detailed audio-visual presentation of the functioning of Orthotronic Control. The tape mechanism and Orthotronic Control will be standard on the new Honeywell 800 data processing systems now being readied at two Boston area plants for commercial production and delivery to customers beginning in October, 1960.

The tape is driven 120 inches per second, in either direction, and is capable of reading or recording 96,000 decimal digits (numerals) or 64,000 alphanumeric characters per second. It has a rewind speed of 360 inches per second. It commences to move, on receipt of a command, in slightly less than one millisecond, and in 2.7 milliseconds is traveling at full speed. The tape moves less than .3 inches on deceleration before it comes to a complete stop. The unit stands five feet, nine inches high and occupies a floor area slightly over two square feet.

### RPC-4000

A transistorized, general purpose digital electronic computing system has been announced by Royal Precision Corporation. The RPC-4000 will be available at a monthly rental of $1,750, or a total sales price of $87,500. This includes the computer and the Tape Typewriter system. First deliveries are scheduled for next July.

The computing system is capable of operating on 9-digit numbers at rates up to 240,000 operations per minute. This has been accomplished by incorporating new design concepts, rather than adding expensive hardware. Overall computing speed results from: high operating rates; versatile command list (42 in all) including commands which facilitate double precision and floating point operations as well as a special command designed to speed-up input and output operations; an index register that allows instruction modification; repeat execution feature; high-speed input-output equipment and an 8-word accumulator for block operation (eight sums may be accumulated simultaneously). The memory has a storage capacity of 8,008 words (word length is 32 usable bits, accommodating a 9-decimal digit number), allowing problem-solving flexibility. A variety of programs can be stored permanently for access when needed. Average access time to main storage is 8.5 milliseconds.

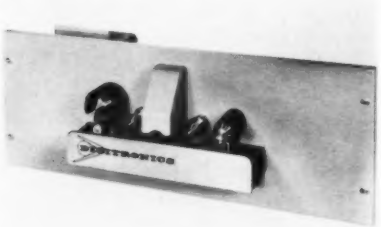
Memory may be searched for full or partial words (through a masking feature) at a rate of 200,000 words per minute. Three thousand words of memory can be scanned in less than one second for full or partial equality to a key word or full or partial equality or superiority to a key word. Part of memory (136 words) is available through the "line" or dual access tracks in from one to six milliseconds.

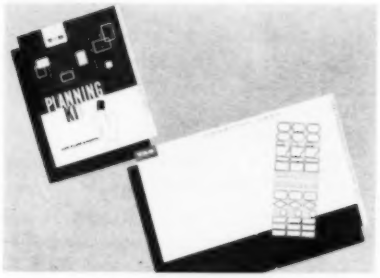
As many as seventeen input-output devices (60 with minor modifications) may be connected on-line. Standard input-output equipment for the RPC-4000 is a tape typewriter system with typewriter, desk, tape punch-read console and chair, all specially designed as a unit. Basic reader speed is 60 characters per second and basic punch speed is 30 characters per second. A reversible photo-electric reader, which reads punched paper tape at 500 characters per second, and a punch (300 characters per second) are available as optional accessories for system expansion. All of the paper tape equipment includes full tape handling reel facilities. Peripheral equipment to be made available in 1961 includes a magnetic tape drum and a line printer. The tape drum will have a maximum storage capacity of about 200,000 words per replaceable tape "cartridge." Peripheral input-output equipment may be turned on and off by the computer, however, point switches are provided. Standard equipment provides compatibility with existing paper tape systems. A Universal Translator, to be available later, will extend compatibility.

The system is manufactured by Librascope Inc., a subsidiary of General Precision Equipment Corporation, and is marketed in the United States through the 104 sales and service offices of the Data Processing Division of Royal McBee Corporation, Port Chester, N. Y.

### PUNCHED PAPER TAPE READER

The model 3500 DYKOR photoelectric reader is a solid-state unit which stops before the next character at reading speeds of 1000 characters per second. All standard 5, 6, 7, or 8 level tapes plus sprocket may be handled interchangeably by a setting of the tape guides. Both dual and single speed units operating at 100 to 1500 characters per second are available. The reader mounts on a standard 19" rack and takes up 7" of space.






### FREE FLOW CHARTING KIT

The kit consists of a folder which contains pressure sensitive stickers of standard flow chart symbols. Instructions are included next to the charting area inside the folder. The system is flexible. Since the pressure-sensitive stickers can be picked up and put down and moved around at will, the user who is establishing a work flow plan can use trial and error without messy revisions. When the chart is complete it is neat and can be photographed or reproduced by other means so that copies can be circulated for approval. For free Flow Chart Planning Kits write to Planning Aids Department, Tab Products Co., 995 Market Street, San Francisco 3, California.

### NEW UNITS FOR SERIES 50

The Data Processing Division of International Business Machines Corporation introduced two new units of IBM Series 50 equipment. The new units are a 402 Accounting Machine with increased group printing speed, and the 77 Collator which compares, merges, and files punched cards into desired sequences. The new 402 differs from the previously introduced Series 50-402 Accounting Machine in that its group printing speed has been doubled, enabling the unit to read, add, subtract, and print at the rate of 100 cards per minute instead of 50 cards per minute as with earlier models. Both 402's perform detail printing at the rate of 50 cards per minute. Depending on the number of type bars and counters ordered, the monthly rental price of the new Series 50-402 ranges from $265 to $335. Selling prices are from $18,610 to $20,000. The Series 50-77 Collator is designed for card filing and card selecting operations. Depending on the function being performed, the 77 can operate at rates of from 120 to 240 cards per minute. The new Series 50-77 rents for $80 a month and sells for $4,500.

### "RECODER"

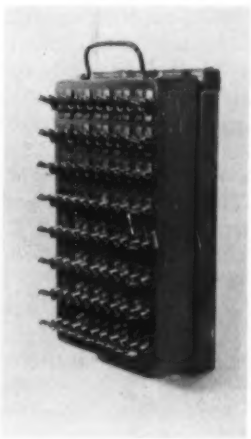
A tape-to-tape converter for IDP or EDP systems called "Recoder" has been announced by Raub Electronics Research Corp., Washington, D. C. The Recoder reads any channel of punched tape and converts punched paper tape to magnetic tape at a speed of 200 characters per second. It converts codes through pluggable matrix; transcribes and converts on a one for one basis, filters out or replaces invalid codes with a set signal and can establish any code structure. It reads punched tape photo-electrically. The Recoder is designed to handle a direct one-to-one conversion of data from punched paper tape to magnetic tape. This means that all information in the paper tape is converted and transcribed into the magnetic tape without stopping either one. Codes in the paper tape are converted to impulses in the magnetic tape at the proper density, depending on computer requirements. The pluggable matrix is designed to enable the user to change codes from the paper tape to magnetic impulses. Because of variations, each installation of the Recoder is engineered to the requirements of each company.

### ACCESSORY EQUIPMENT

A line of full suspension files, for punched card filing, has been developed by Monarch Metal Products, Inc. of New Windsor, New York. At the present time, three sizes are offered — 30, 22 and 15 drawer. Functional improvements have been incorporated, such as finger-tip release, cradles that roll on roller bearings, trays that roll on nylon bearings and three position compressor.

### REPRODUCER BOARD

Edward Ochman Systems announced the OCKIE-SWITCH 80-80 Reproducer Board which works with the IBM 513, 514, and 552 Control Panels. It will reproduce 80-80 and compare 80 columns, reproduce with field elimination and compare on all columns being reproduced, gang-punch, simultaneously reproduce, gang-punch and compare on all columns being reproduced, gang-punch previously punched cards, and intersperse gang-punch. The OCKIE-SWITCH can be rented or purchased with rental charges applied against purchase price. For details write to: Edward Ochman Systems, Box 141, Fairfield, Conn.



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# OUTPUTS

ITEMS OF INTEREST FROM HERE AND THERE

### MILITARY ELECTRONICS SPEAKERS

Principal speakers at the Institute of Radio Engineers 1960 Winter Convention on Military Electronics, held in Los Angeles February 3, 4 and 5, were James M. Bridges, Director of Electronics, Office of the Director of Defense, Research and Engineering; Lt. General Arthur G. Trudeau, Chief, Research and Development, Department of the Army; and Major General O. J. Ritland, Commander of the Air Force Ballistic Missile Division, Air Research and Development Command.

### HIGH SPEED TAPE READER

The Automation Accessories Division of Associated Automation Limited, a member of the Elliott-Automation Group, announced that it is currently achieving speeds, with reliable operation, of up to 500 characters per second on the transistorized High Speed Tape Reader it is developing. Functional tests indicate the accuracy and reliability of the new Reader. It has read 10,000,000 characters without error.

### DP COURSES

Executives of 120 business firms and government organizations completed the 2,000th data processing course held under International Business Machines Corporation's customer executive program. The setting was the company's Education Center in Endicott where 137 students were enrolled in a class on punched card and computer techniques. One historical note was the presence of two members of the General Electric Corporation. Although the Customer Executive Program officially dates from 1936, General Electric representatives were enrolled at their own request in Endicott sales training classes as early as 1934. Further requests for participation by other customer firms wishing to familiarize themselves with IBM equipment in the same way led to the establishment of an independent Customer Executive Program by direction of the late Thomas J. Watson, Sr.

### FARRINGTON

The board of directors of Farrington Manufacturing Company has approved the acquisition of the Coated Fabrics Division of Sawyer-Tower, Inc., Watertown, Mass., William M. Tetrick, Farrington President, and Jacob Saliba, President of Sawyer-Tower, announced. The acquisition is a cash transaction. Mr. Saliba will take over the newly created post of executive vice president of the Packaging Division of Farrington Texol Corporation, of Walpole, Mass., by adding the vinyl coating of fabrics to Texol's line of pyroxylin-coated fabrics. The Coated Fabrics Division of Sawyer-Tower is a vinyl coater of fabrics for the aircraft and missile industry in the United States.

### AERONUTRONIC FIELD OFFICE

Aeronutronic, a Division of Ford Motor Company, has established a new field office at Huntsville, Ala. to provide representation for the Division with the U. S. Army Ordnance Missile Command, the National Aeronautics and Space Administration-Army Ballistic Missile Agency team and other activities in the area.

Leland C. Pleger, formerly manager of Operations Research, Advanced Systems Development, for Aeronutronic's Tactical Weapon Systems Operations, has been appointed manager of the new Huntsville office, activated in December.

### ROYALTY-FREE LICENSES

International Business Machines Corporation announced that it is offering royalty-free licenses for the production and marketing of a new, low-cost Punching Imprinter developed by the company's Supplies Division. IBM does not plan to manufacture or market the device, but anticipates that other companies will do so. The device is designed to facilitate credit card accounting for department stores, service stations, restaurants, banks, and other businesses using charge account systems. The Punching Imprinter — about the size of a small adding machine—will be used at the point of sale with customer credit cards containing account numbers and other pertinent data in punched hole form.

### EXPOSITION

The city of Los Angeles, Calif. has been selected as the site for the United States' second national showing of The Business Equipment Exposition. Announcement of the selection was made in Washington by Office Equipment Manufacturers Exhibits, Inc. (OEME). The Los Angeles showing, to be held November 1-4, 1960 at the Los Angeles Memorial Sports Arena, will follow by about a year the industry's inaugural exposition in Washington, D. C.

### COMPUTER FOR FAA

The Federal Aviation Agency tied-in the computer at the Indianapolis Air Route Traffic Control Center with similar equipment in Washington, D. C., Cleveland and Pittsburgh. It is an IBM RAMAC 650. The new 650 takes flight messages directly from teletype lines, edits them, checks them for errors and feeds them to the RAMAC 650. The RAMAC unit integrates incoming information with information already stored in its magnetic disk memory files. The stored facts include geographical locations of airways and radio beacons, reference tables, and a complete record of flight plans including those awaiting processing. New data is added, changes are made and the updated strips to be forwarded to adjacent centers are automatically entered into the system by a special keyboard and punched paper tape for teletype transmission. Outgoing messages are also monitored by the new 650 unit.

### RAMAC FOR ATLANTIC

Installation of the large computer at the refinery will be part of Atlantic's continuing modernization of its already extensive data processing facilities. As part of this plan, it was revealed that next February, an IBM RAMAC 305 computer will be put into service in the Data Processing Center at company headquarters in Philadelphia. Atlantic will store information pertaining to customers and products in the RAMAC 305 and will price and extend sales and prepare printed invoices where applicable. ■

# PEOPLE AND PLACES

### OLYMPIC SCORING

An electronic data processing machine will be introduced at the VIII Olympic Winter Games to be held at Squaw Valley, California, February 18 - 28. It is the International Business Machine Corporation's RAMAC 305. For the first time in this winter sports event, spectators, officials, press and participants will have a minute-by-minute report of scores, standings and results. All of IBM's services and equipment, estimated at $400,000, are being donated by the company. In addition, they have constructed their own building, which will house the equipment at Squaw Valley. The system is organized to score many different events simultaneously whether speed or figure skating, slaloms, downhill, cross country or ski jumping.

### EXECUTIVE ASSISTANT

WILLIAM J. SUCHORS has been named executive assistant to Dause L. Bibby, executive vice president of the Remington Rand Division of Sperry Rand Corporation. Mr. Suchors was formerly with Uarco, Inc., Chicago, as general sales manager. Prior to Uarco he was manager of product planning, electric accounting division of International Business Machines Corp.

### MOORE PROMOTIONS

T. S. Duncanson, president of Moore Corporation, announced the appointment of IRWIN A. BAILEY as general manager of Moore Business Forms Southern Division, following the retirement of Hugh D. Clark, December 31, 1959. JUD W. SINCLAIR was named as controller and CLAYTON B. ATKINS, as assistant comptroller. Each of the new Moore executives has had a long, successful career in the organization.

### ROYAL McBEE CHAIRMAN

FRED C. RUMMEL has been named chairman of the finance committee of Royal McBee Corporation, Allan A. Ryan, chairman announced. Mr. Rummel, who is chairman of the board of M. M. Freeman and Company, Philadelphia, Pa., investment bankers, succeeds the late Kingsley Kunhardt, formerly vice president of the Morgan Guaranty Trust Company. Mr. Rummel was named a director of The McBee Company in 1946 and has been a director of the merged corporation since its organization in 1954.

### BENDIX VICE PRESIDENT

ROY H. ISAACS has been named vice president in charge of government relations for the Bendix Aviation Corporation. Mr. Isaacs, formerly general manager of the Eclipse-Pioneer Division, Teterboro, N. J., will be responsible for the coordination of all government sales by the corporation and its divisions. He will make his headquarters at the corporation's central office in Detroit.

### UNIVAC CONTROLLER

ROCCO M. LAGINESTRA has been appointed to the newly-created post of controller for the Remington Rand Univac Division of Sperry Rand Corporation, with offices in New York. Mr. Laginestra comes to Remington Rand after two and a half years as controller and general manager of Curtis Wright's Europa Division with headquarters in Amsterdam, Holland.

### SALES MANAGER

WARD J. KOEPENICK has been appointed general sales manager of the Marchant Division of Smith-Corona Marchant Inc., Oakland, Calif., advancing from national sales manager. Mr. Koepenick will have full responsibility for all marketing operations, including sales of calculators and adding machines, through Marchant's nation-wide organization of district sales offices and a Canadian subsidiary, Marchant Calculators, Ltd. He also will assume overall direction of all departmental activities of Marchant's marketing division, which embrace machine maintenance service, sales promotion, market research, and advertising.

### DENNISON APPOINTS TWO

In the reorganization of the company to a divisional set-up, Dana C. Huntington, president of Dennison Manufacturing Company, Framingham, Mass., announced the appointment of FRANK T. GEROULD as National Sales Manager of the Machine Systems Division and MATTHEW P. CLARKE as Merchandise Manager. The Dennison Machine Systems Division is responsible for the design, development and production of Dial-Set and Pinning Machines for retail and industrial use and Printing Punch Machines which print and code-punch tickets to be used as input media for data processing.

### STANDARD REGISTER ASSISTANT

BRAYTON H. SLADE has been appointed assistant to Kenneth P. Morse, executive vice president and general manager of The Standard Register Company.

### COMPUTER OPERATIONS

DR. R. E. BECKWITH has joined Computer Operations at Aeronutronic, a Division of Ford Motor Company, as head of the Operations Research Section in the Army Tactical Operations Center (ARTOC) project. Prior to joining Aeronutronic, Dr. Beckwith was a senior research engineer with the Jet Propulsion Laboratory, California Institute of Technology. He previously served as an instructor in the De-

partment of Mathematics and Statistics at Purdue University. Before joining the staff at Purdue, he was a member of the Operations Research Group at Case Institute of Technology, where he participated in consulting programs with many major U. S. firms.

### RCA

A. S. KRANZLEY has been appointed Manager, Product Planning, Electronic Data Processing Division, Radio Corporation of America. From 1950 to 1953, Mr. Kranzley was an associate research engineer at the Burroughs Research Center in Philadelphia. In the latter year, he came to RCA as an applications analyst. In 1958, he was named Manager of Electronic Data Processing Methods, a position he held until his new appointment.

### GENERAL MANAGER

The appointment of FRANK F. CLEMINSHAW as vice president and general manager of John Diebold & Associates, Inc., management consultants, was announced. Mr. Cleminshaw had been comptroller of The American Car & Foundry Division, ACF Industries, Inc., since 1955. He has had 25 years of experience in the organization, planning, and control of businesses.

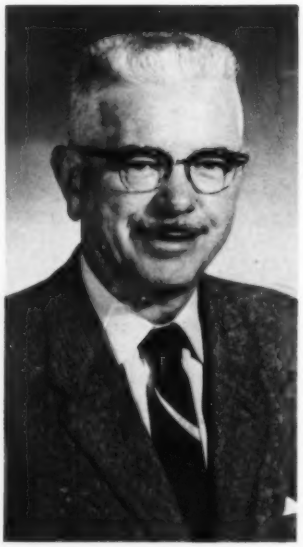
### PROGRAM MANAGER

Ray R. Eppert, president, Burroughs Corporation, announced the promotion of Dr. CHARLES L. REGISTER to Program Manager—ALRI, (Airborne Long Range Input) with responsibility for management of the company's new $35,000,000 U. S. Air Force contract. For the past six months he has been manager of Burroughs Great Valley Laboratories near Philadelphia. ALRI is a system to provide the North American continent with a seaward extension of SAGE, an existing network of radars, data processors and computers which keep decision-making centers informed of approaching aircraft. ALRI calls for radars and data processors to be housed in RC-121 (Constellation) reconnaissance aircraft. Dr. Register is a retired U. S. Army Colonel.

### PROMOTIONAL MANAGER

HAROLD R. HUNGERFORD has been named advertising and sales promotional manager of the Remington Rand Univac Division of Sperry Rand Corporation. He will also be responsible for the training of customer and individual marketing personnel. Mr. Hungerford joined the company in New York in 1927 as a punched card machine operator.

### NECROLOGY



BEN S. GRAHAM, 59, director of the systems and procedures division of The Standard Register Company and a pioneer in paperwork simplification, died on January 7, 1960. He had been in ill health for some time. Mr. Graham was an internationally known authority on the subject of paperwork simplification, conducting special lectures and courses at universities and management conferences throughout the country, in addition to an extensive program of addresses to various professional organizations. Included among these were staff memberships on the Work Simplification Conference, Lake Placid, N. Y., and the University Work Simplification Round Table, Wharton School, University of Pennsylvania.

### UNIVAC REGIONAL MANAGER

MYRON A. ANGIER has been named southern regional sales manager of the Remington Rand Univac Division of Sperry Rand Corporation with headquarters in Atlanta. He will be responsible for all Univac computer sales and service for the entire South. Mr. Angier joined the company in 1946 as a trainee for punched card machines sales.

### DIRECTOR OF PLANNING

International Business Machines Corporation announced the appointment of G. H. RATHE, Jr., as director of market planning on the corporate staff. Mr. Rathe joined IBM in 1948 and served in various sales posts. He was appointed manager of marketing for the Federal Systems Division in 1958 and was advanced to director of plans and programs for the division this year.

### NEW PURCHASING AGENT

WILLIAM B. BRYANT has been appointed manager of the general purchasing department at the IBM Supplies Division engineering laboratory in Vestal, N. Y. Mr. Bryant, who attended Pennsylvania State College, joined IBM in 1943 in Endicott, N. Y. Prior to his present appointment he was a technical specialist in the IBM Federal Systems Division plant in Owego, N. Y.

■ ■ ■

## Creative Drive . . .

*(continued from page 25)*

Here's where the data processing manager can sell himself and his creative ideas to management.

The arch-enemy of creativity is routine. In the case of Joe's new vacation procedure, his staunchest supporter was the Personnel Manager because the procedure relieved him of the routine of having to sit down with his assistant and review the situation. Now, Secaucus Corporation, like so many other modern corporations, has a well functioning engineering department. But it would function better if something could be done about the shortage of engineers. Since our friend, the Personnel Manager, has been relieved of the vacation routine he is now free to think up new *creative* gimmicks, as so many firms are doing nowadays, to attract qualified engineers to Secaucus.

At this point, I'd like to take my tongue out of my cheek long enough to underline this really vital point. *Creative thinking inspires more creativity in others.* If you, as a data processing manager, can come up with ideas to cut down the routine of your superiors—and we're all plagued with detail to some extent—you have performed a real service for your company and yourself, a service that should eventually be reflected in more dollars for all concerned. ■

## Work Measurement . . .

*(continued from page 24)*

that have been established for each job. In those cases where equipment is unavailable because of breakdown and the operator is handicapped thereby, he would be compensated at his base rate during that time. By the use of an incentive payment plan, it can be conceived that many dollars of savings could be realized as the result of increased production.

### For the Future

Work measurement is a tool that has gained wide use during the past few years in determination of work loads, man and machine availability, and efficiencies of both in paper work processing. Numerous management consulting firms have become specialists in this area and many companies have instituted such programs within their own organizations with their own personnel, usually selected from their industrial engineering departments.

While we have discussed here only the application of work measurement to the punched card department, the same techniques can be applied at any point from the keypunch section to the computer operation and, with certain refinements, to the systems and procedures and computer programming groups. ■

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partment of Mathematics and Statistics at Purdue University. Before joining the staff at Purdue, he was a member of the Operations Research Group at Case Institute of Technology, where he participated in consulting programs with many major U. S. firms.

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The appointment of FRANK F. CLEMINSHAW as vice president and general manager of John Diebold & Associates, Inc., management consultants, was announced. Mr. Cleminshaw had been comptroller of The American Car & Foundry Division, ACF Industries, Inc., since 1955. He has had 25 years of experience in the organization, planning, and control of businesses.

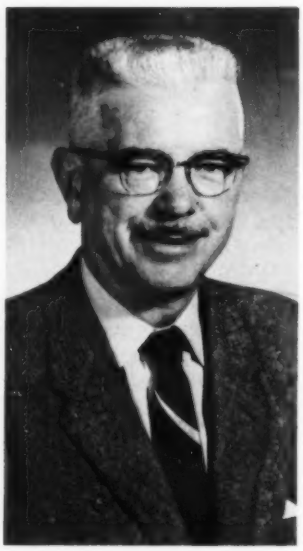
### PROGRAM MANAGER

Ray R. Eppert, president, Burroughs Corporation, announced the promotion of Dr. CHARLES L. REGISTER to Program Manager—ALRI, (Airborne Long Range Input) with responsibility for management of the company's new $35,000,000 U. S. Air Force contract. For the past six months he has been manager of Burroughs Great Valley Laboratories near Philadelphia. ALRI is a system to provide the North American continent with a seaward extension of SAGE, an existing network of radars, data processors and computers which keep decision-making centers informed of approaching aircraft. ALRI calls for radars and data processors to be housed in RC-121 (Constellation) reconnaissance aircraft. Dr. Register is a retired U. S. Army Colonel.

### PROMOTIONAL MANAGER

HAROLD R. HUNGERFORD has been named advertising and sales promotional manager of the Remington Rand Univac Division of Sperry Rand Corporation. He will also be responsible for the training of customer and individual marketing personnel. Mr. Hungerford joined the company in New York in 1927 as a punched card machine operator.

### NECROLOGY



BEN S. GRAHAM, 59, director of the systems and procedures division of The Standard Register Company and a pioneer in paperwork simplification, died on January 7, 1960. He had been in ill health for some time. Mr. Graham was an internationally known authority on the subject of paperwork simplification, conducting special lectures and courses at universities and management conferences throughout the country, in addition to an extensive program of addresses to various professional organizations. Included among these were staff memberships on the Work Simplification Conference, Lake Placid, N. Y., and the University Work Simplification Round Table, Wharton School, University of Pennsylvania.

### UNIVAC REGIONAL MANAGER

MYRON A. ANGIER has been named southern regional sales manager of the Remington Rand Univac Division of Sperry Rand Corporation with headquarters in Atlanta. He will be responsible for all Univac computer sales and service for the entire South. Mr. Angier joined the company in 1946 as a trainee for punched card machines sales.

### DIRECTOR OF PLANNING

International Business Machines Corporation announced the appointment of G. H. RATHE, Jr., as director of market planning on the corporate staff. Mr. Rathe joined IBM in 1948 and served in various sales posts. He was appointed manager of marketing for the Federal Systems Division in 1958 and was advanced to director of plans and programs for the division this year.

### NEW PURCHASING AGENT

WILLIAM B. BRYANT has been appointed manager of the general purchasing department at the IBM Supplies Division engineering laboratory in Vestal, N. Y. Mr. Bryant, who attended Pennsylvania State College, joined IBM in 1943 in Endicott, N. Y. Prior to his present appointment he was a technical specialist in the IBM Federal Systems Division plant in Owego, N. Y.

■ ■ ■

## Creative Drive . . .

*(continued from page 25)*

Here's where the data processing manager can sell himself and his creative ideas to management.

The arch-enemy of creativity is routine. In the case of Joe's new vacation procedure, his staunchest supporter was the Personnel Manager because the procedure relieved him of the routine of having to sit down with his assistant and review the situation. Now, Secaucus Corporation, like so many other modern corporations, has a well functioning engineering department. But it would function better if something could be done about the shortage of engineers. Since our friend, the Personnel Manager, has been relieved of the vacation routine he is now free to think up new *creative* gimmicks, as so many firms are doing nowadays, to attract qualified engineers to Secaucus.

At this point, I'd like to take my tongue out of my cheek long enough to underline this really vital point. *Creative thinking inspires more creativity in others.* If you, as a data processing manager, can come up with ideas to cut down the routine of your superiors—and we're all plagued with detail to some extent—you have performed a real service for your company and yourself, a service that should eventually be reflected in more dollars for all concerned. ■

## Work Measurement . . .

*(continued from page 24)*

that have been established for each job. In those cases where equipment is unavailable because of breakdown and the operator is handicapped thereby, he would be compensated at his base rate during that time. By the use of an incentive payment plan, it can be conceived that many dollars of savings could be realized as the result of increased production.

### For the Future

Work measurement is a tool that has gained wide use during the past few years in determination of work loads, man and machine availability, and efficiencies of both in paper work processing. Numerous management consulting firms have become specialists in this area and many companies have instituted such programs within their own organizations with their own personnel, usually selected from their industrial engineering departments.

While we have discussed here only the application of work measurement to the punched card department, the same techniques can be applied at any point from the keypunch section to the computer operation and, with certain refinements, to the systems and procedures and computer programming groups. ■

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## Notable Quotes

"The current changes sweeping the American office represent a golden opportunity for executives trained in office administration to move into the top echelons of corporate management." "Automation Will Raise Status of Office Manager," AMA Speakers Report, *Office Management*, November 1959.

"Another device that is going to make it easier for companies to centralize control of operations is the office electronic computer." Edward McCreary, "Decentralization On the Way Out?" (Condensed from Dun's Review and Modern Industry) *The Management Review*, October 1959.

"Machines used to replace jobs—not people." "Electronics Can Be a Girl's Best Friend," *Office Management*, October 1959.

"Communications can never be an exact science, but certain basic rules should be followed." "The Magic Words That Get Things Done." *Office Management*, December 1959.

"Experts agree that the major problem involves people; better training for those at the operating level; and more active participation from those at the top management level." "Pinpointing the Problems of Data Processing," *Management and Business Automation*, December 1959. ■

**Coming in the March issue**

**SELECTING THE RIGHT EQUIPMENT**

# BOOK SHELF

## NON-TECHNICAL

**USE OF ELECTRONIC DATA PROCESSING EQUIPMENT** — Hearing before the Subcommittee On Census and Government Statistics of the Committee On Post Office and Civil Service. House of Representatives Eighty-Sixth Congress, First Session, June 5, 1959, United States Government Printing Office, Washington, D. C.

The proceedings of this hearing are a most worthwhile reference for anyone concerned with data processing. The testimony of many responsible government officials comprise the bulk of the hearing. However, the three appendices A, B, and C, are the interpretations and conclusions reached. A letter from the Secretary of the Treasury regarding manpower utilization comprises Appendix A. Appendix B renders an early history of electronic systems and cites several needs still unfulfilled, such as experimentation, and research and development. Appendix C is divided into two sections, the first concerned with the nature of the study and the second with what the study showed. Two Chapters are omitted in this section. These are: Chapter II, Job Standards and Job Engineering and Chapter IV, Turnover.

## TECHNICAL

**HANDBOOK OF ELECTRONIC CONTROL CIRCUITS** by John Markus, McGraw-Hill Book Company, Inc., 330 W. 42nd St., New York 36, N. Y., 1959, 350 pages, $8.50.

This compilation gives a selected reference to over 250 electronic circuits, each complete with values of components. The salient points of a number of circuits of a given type as a guide for choosing the most promising circuit for a particular application can be obtained. Advances in the field are included to show the present state of the art of circuitry in many areas including computer control circuits, machine control circuits, etc. Each presentation covers a circuit based on equipment now in actual operation. Consequently, the practical usefulness of any circuit being considered for adaptation has already been proved. This volume is the third in a series of handbooks compiling important circuits for easy access. It extends but does not duplicate the material in the two earlier volumes.

**ELECTRONICS COMPONENTS HANDBOOK,** Volume III. Edited by K. Henney, C. Walsh and H. Mileaf, McGraw-Hill Book Company, Inc., 330 W. 42nd St., New York 36, N. Y., 1959, 192 pages, $10.00.

Publication of Volume 3 of the Electronic Components Handbook completes the series. It gives factual information on certain electronic components in wide use. Emphasis throughout this volume has been placed on component types. Where military specifications exist they are summarized, and in addition much general know-how, safety factors, and other matters useful to the equipment designer are included.

This volume provides data on transformers and inductors, including power, pulse, hybrid, bistable, as well as connectors, including jacks, plugs, and sockets. Also presented are terminals and hardware, including knobs, dials indicating light assemblies, flexible shafting and fasteners.

■ ■ ■

## CONSULTANT'S DIARY . . .

*(continued from page 5)*

**JANUARY 25th — MONDAY**

Today, we start another survey — we do about two a month. The purpose is usually to establish how to improve the data processing situation. This diagnosis may take from a few days to a month depending upon the number of applications and complexity of each. Sometimes when we are almost finished with the proposal we find a flaw and have to start all over again. It's frustratin! ! !

**JANUARY 27th — WEDNESDAY**

Today we got another indication that for punched card users with more than three of any major pieces of equipment, such as tabulators, there is a need for an effective determination of equipment needs. A bunch of NMAA cronies were complaining that you just can't tell if you need three tabulators or four; or whether you need four or five, etc.

**JANUARY 29th — FRIDAY**

Finished lining up three top-notch columns by three reliable, exceptionally articulate and working data processing experts — Ray Marien, Joe De Paris, and Ray Dreyfack. Their stuff appears in this issue for the first time. It makes the magazine better — and therefore, easier to edit. A good day's work. Let us know what you think of it and of the diary. The diary idea is Frank Gille's — our publisher. I enjoy it, so if you don't object too vigorously you'll continue to be subject to it. It will continue to be an informal and personal memorandum of the day-to-day activities of my mother's favorite editor. ■

### INDEX TO ADVERTISERS


| | |
|---|---|
| Baltimore Business Forms Co., The | 3 |
| Beemak Plastics | 21 |
| Bendix Computer Division, Bendix Aviation Corp. | Inside Front Cover |
| Business Electronics Inc. | 37 |
| Data Processing Handbooks | 26 |
| International Business Machines Corp., Supplies Division | 11 |
| Mac Panel Company | Inside Back Cover |
| Monarch Metal Products, Inc. | 4 |
| Punched Card Data Processing Annual, The | 29 |
| Scriptomatic, Inc. | 6 |
| Wright Line, Inc., The | Back Cover |


## Seen in Print

**INDUSTRIAL ENGINEERING IN THE NAVY,** Navy Management Review, December 1959.

Forty-five years' progress in fifteen years! That's industrial engineering in Navy. Concurrent with the development of standards, there has been a continuous effort to improve methods of performing the work. The industrial engineer's expanding role in the area of information needs for management may mean he will make greater use of such things as Operations Research, electronic data processing, and office automation.

**WORK STANDARDS AND STANDARDIZATION** by A. M. Webster, Systems & Procedures, November 1959.

In establishing work standards, it is essential that the true meaning of standard performance be established to serve as a guide in evaluating employee accomplishment. Standard performance should mean performance comparable to that which would be expected of a properly trained, satisfactory employee. It should mean neither superior nor inferior performance, but rather a normal competent level of accomplishment.

**SMALL COMPUTERS DO A BIG JOB FOR INDUSTRY** by Scott Schmedel, The Management Review, January 1960.

Businessmen are discovering more and more jobs which small computers with modest electronic intelligence can do nicely — and much less expensively than the "giant brains" can. The modest initial cost of the small computer is perhaps its main selling point for small concerns. With demand brisk, more small computers are in the offing. Relatively modest development costs are encouraging computer manufacturers to design and produce new machines, and the increasing use of transistors will tend to make small computers less bulky than ever.

**SIMPLE ESTIMATES FOR COMPLEX WORK LOADS** by Richard Hillsley and Albert L. Harbury, Harvard Business Review, January/February 1960.

The approach described in this article is designed not to take management judgment out of work-load estimates, but to so combine it with simple statistical techniques that the risks in estimating can be largely reduced. The proposed system should make it possible for a company to gain a far better picture of its future work-load commitments, with all that this means for management efforts to keep ahead of competition.

■ ■ ■

# Data Processing FORUM

## QUESTION: What Will Be the Most Significant Data Processing Development in 1960?

**Kenneth S. Axelson**
**Partner**
**Peat, Marwick, Mitchell & Co.**
**New York City, N. Y.**

THE JOB OF RUNNING A BUSINESS continues to increase in complexity. As a result, we find greater attention being given each year to the management problems arising in industry. Data processing has provided one of the most useful tools for attacking these problems in such areas as production planning, inventory control, management reporting and a host of other problem areas. Yet, as of today, there are only a few scattered examples of data processing installations which have successfully overcome these more complex problems.

Many companies have acquired data processing equipment with the expectation of solving these tough problems. However, they have had to first pay for the equipment and gain necessary experience by applying more routine procedures. such as payrolls, billings, sales analyses, and accounts receivable. Many of these companies are now over the first hurdle; they have their routine procedures programmed and operating, installation of the equipment has been justified from an economic standpoint, and know-how has been acquired on the operations and pitfalls of such equipment. Now, these companies are in a position to turn their attention to the more complex problems which will require imaginative thought in the utilization of advanced management techniques.

As a result, the coming year should show great strides in the use of data processing equipment for scientific management. Particularly, we should see some major breakthroughs in the application of computers in the area of management reporting.

**Fredric M. Biathrow**
**General Project Supervisor**
**New York Telephone Co.**
**New York, N. Y.**

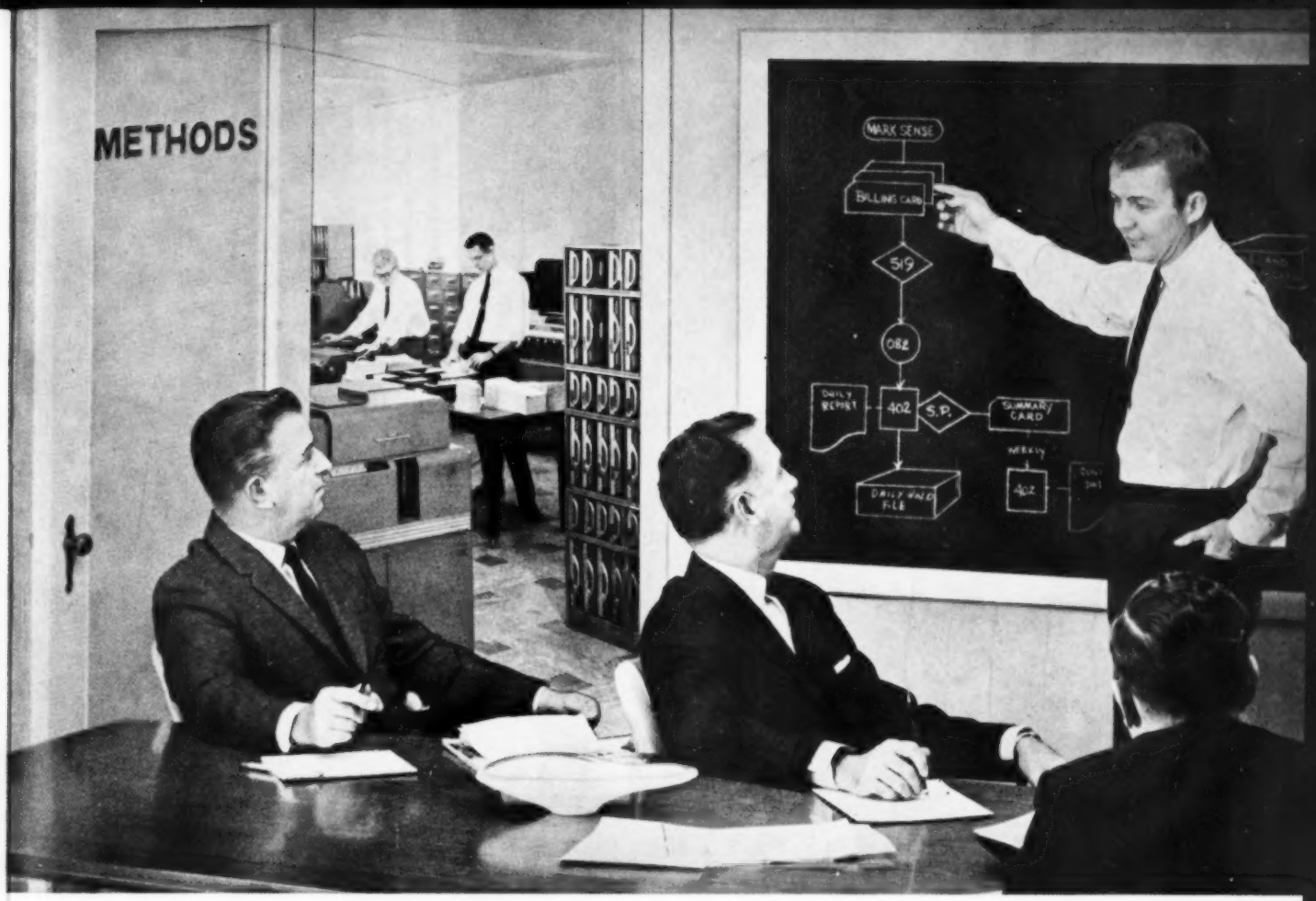
DEVELOPMENT OF ADMINISTRATIVE PROCEDURES in the data processing installation will receive sorely needed attention during the coming year. This will focus sharply on organizational size and structure. For any particular company the details of efficient size for manipulation will vary. Also varying in detail will be the format of operation within a data processing department. In addition, more refined and effective machine utilization will be enforced.

Among the methods used to achieve greater efficiency will be more formal training of supervisory personnel. It will entail extra effort initially but will pay off in greater efficiency in the long run. The formal training will consist of theory and practice. The classroom or theory phase will be sponsored and paid for by the individual companies. The practical phase will enable the theory to be put into practice in workshop set-ups, such as using the machine room after hours and operating it as though it were a normal work period—a kind of dress-rehearsal for the actual operation.

These and other methods will do much to overcome many of the administrative weaknesses so evident in data processing departments. Managers and supervisors should manage and supervise, and effectively, not press buttons, handle cards or wire boards.

Proper emphasis on solving administrative deficiencies effectively will be the most significant development in 1960.

■ ■ ■

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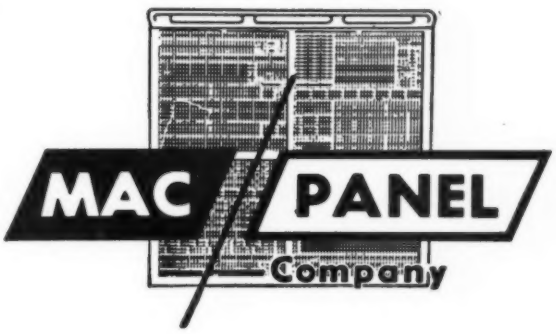


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# DATA PROCESSING

The Magazine of Automatic Office Methods and Management

**Editorial Competition** page 25

**Selecting the Right Equipment** page 17